SOIL SURVEY

Walthall County Mississippi

Issued April 1968

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

Major fieldwork for this soil survey was done in the period 1959–65. Soil names and descriptions were approved in 1965. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1963. This survey was made cooperatively by the Soil Conservation Service and the Mississippi Agricultural Experiment Station. It is part of the technical assistance furnished to the Walthall County Soil Conservation District.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY of Walthall County contains information that can be applied in managing farms and woodland; in selecting sites for roads, ponds, buildings, or other structures; and in appraising the suitability of tracts of land for agriculture, industry, or recreation.

Locating Soils

All of the soils of Walthall County are shown on the detailed map at the back of this survey. This map consists of many sheets that are made from aerial photographs. Each sheet is numbered to correspond with numbers shown on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information in the survey. This guide lists all of the soils of the county in alphabetic order by map symbol. It shows the page where each kind of soil is described and the page for the capability unit. It also shows the woodland group and woodland forage site in which the soil has been placed.

Individual colored maps showing the relative suitability or limitations of soils for many specific purposes can be developed by using the soil map and information in the text. Interpretations not included in the text can be developed by grouping the soils according to their suitability or limitations for a particular use. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils in the descriptions of the soils and in the discussions of the interpretative groupings for crops and pasture and for woodland.

Foresters and others can refer to the subsection "Use of Soils as Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others concerned with wildlife will find information about soils and wildlife in the subsection "Use of Soils for Wildlife and Fish."

Engineers and builders will find under "Engineering Uses of Soils" tables that give engineering descriptions of the soils in the county and that name soil features that affect engineering practices and structures.

Scientists and others can read about how the soils were formed and how they are classified in the section "Formation, Classification, and Morphology of Soils."

Students, teachers, and others will find information about soils and their management in various parts of the text, depending on their particular interest.

Newcomers in Walthall County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the Area," which gives additional information about the county.

U.S. GOVERNMENT PRINTING OFFICE: 1968

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Contents

NOTICE TO LIBRARIANS

Series year and series number are no longer shown on soil surveys. See explanation on the next page.

Issued April 1968

EXPLANATION

Series Year and Series Number

Series year and number were dropped from all soil surveys sent to the printer after December 31, 1965. Many surveys, however, were then at such advanced stage of printing that it was not feasible to remove series year and number. Consequently, the last issues bearing series year and number will be as follows:

Series 1957, No. 23, Las Vegas and Eldorado Valleys Area, Nev.
Series 1958, No. 34, Grand Traverse County, Mich.
Series 1959, No. 42, Judith Basin Area, Mont.
Series 1960, No. 31, Elbert County, Colo. (Eastern Part)
Series 1961, No. 42, Camden County, N.J.
Series 1962, No. 13, Chicot County, Ark.
Series 1963, No. 1, Tippah County, Miss.

Series numbers will be consecutive in each series year, up to and including the numbers shown in the foregoing list. The soil survey for Tippah County, Miss., will be the last to have a series year and series number.

SOIL SURVEY OF WALTHALL COUNTY, MISSISSIPPI

BY ALBERT R. LEGGETT, ALLEN C. MILBRANDT, L. BROOKS HALE, AND PAUL J. BARLOW, SOIL CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE

UNITED STATES DEPARTMENT OF AGRICULTURE IN COOPERATION WITH THE MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

WALTHALL COUNTY is in the extreme south-central part of Mississippi (fig. 1). It has a land area of 257,920 acres, or 403 square miles. Dairying, the raising of beef cattle, and tree farming are now the main enterprises.

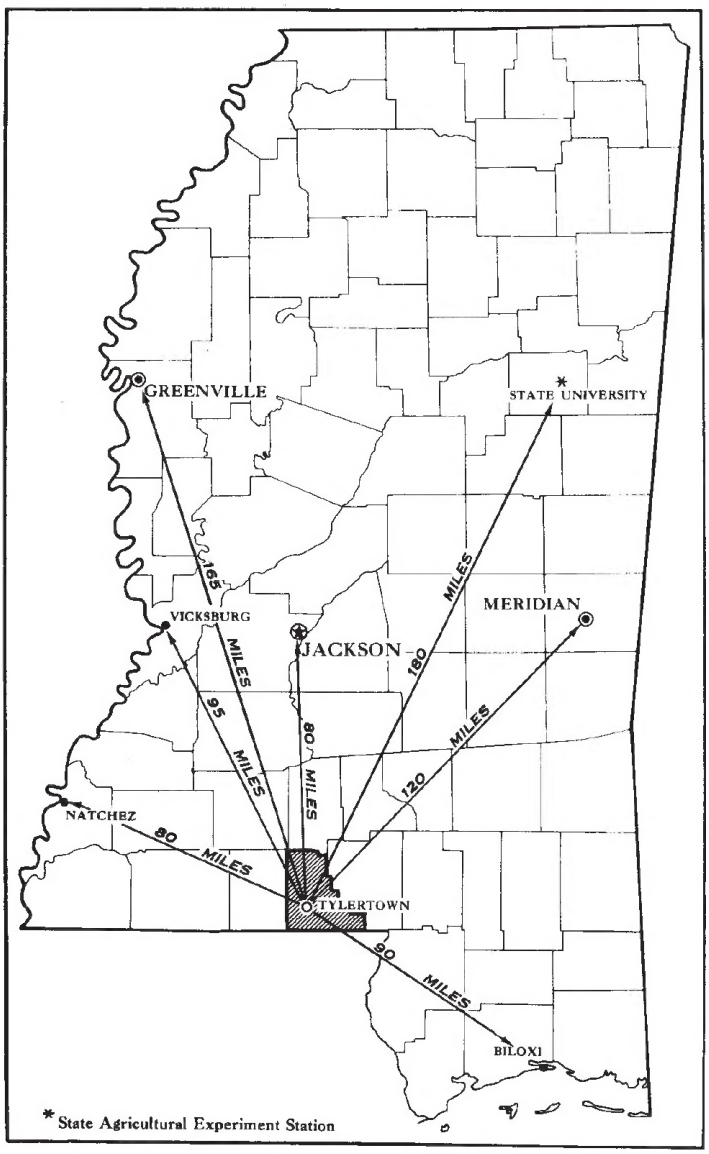


Figure 1.—Location of Walthall County in Mississippi.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soils are in Walthall County, where they are located, and how they can be used.

They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the material that has not been changed much by leaching or by roots of plants.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. To use this survey efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Brookhaven and Ruston, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that go with their behavior in the natural, untouched landscape. Soils of one series can differ somewhat in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man.

Some types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into phases. The name of a soil phase indicates a feature that affects management. For example, Ruston fine sandy loam, 2 to 5 percent slopes, is one of several phases of Ruston fine sandy loam, a soil type that ranges from nearly level to hilly.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodland, buildings, field borders, trees, and

other details that greatly help in drawing boundaries accurately. The soil map in the back of this survey was prepared from the aerial photographs.

The areas of soil of the same kind outlined on the soil map and identified by a symbol are called mapping units. On most maps detailed enough to be useful in planning management of farms and fields, a mapping unit is nearly equivalent to a soil type or a phase of a soil type. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil type or soil phase.

In preparing some detailed maps, the soil scientists have a problem of delineating areas where different kinds of soils are so intricately mixed, and so small in size that it is not practical to show them separately on the map. Therefore, they show this mixture of soils as one mapping unit and call it a soil complex. Ordinarily, a soil complex is named for the major kinds of soil in it, for example, Ruston-Lucy complex, 17 to 40 percent slopes. In some places two or more similar soils are mapped as a single unit, called an undifferentiated soil group, if the differences between the soils are too small to justify separate mapping. An example in this county is Shubuta and Boswell soils, 5 to 8 percent slopes, eroded. Also, on most soil maps, areas are shown that are so rocky, so shallow, or so frequently worked by wind and water that they cannot be classified by soil series. These areas are shown on a soil map like other mapping units, but they are given descriptive names, such as Gullied land or Sandy alluvial land, and are called land types.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soils in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soils. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in a way that it is readily useful to different groups of readers, among them farmers, managers of woodland, engineers, and homeowners. Grouping soils that are similar in suitability for each specified use is the method of organization commonly used in the soil survey. On the basis of the yield and practice tables and other data, the soil scientists set up trial groups, and then test them by further study and by consultation with farmers, agronomists, engineers, and others. Then, the scientists adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this soil survey shows, in color, the soil associations in Walthall County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of farming or other land use. Such a map is not suitable for planning the management of a farm or field, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect management.

The ten soil associations in Walthall County shown on the general soil map are described in the following pages.

1. Brookhaven-Providence-Ora Association

Moderately well drained and well drained, nearly level to sloping, silty and loamy soils with a fragipan; on uplands

This association occurs in the northern part of the county in a single area on nearly level to sloping uplands. It covers about 5 percent of the county.

The Brookhaven soils make up about 35 percent of this association; the Providence soils, 30 percent; and the Ora soils, 25 percent. The remaining 10 percent consists of the somewhat poorly drained Bude soils and the poorly drained Frost soils.

The Brookhaven soils are moderately well drained. They have a black to very dark grayish-brown silt loam surface layer and a yellowish-brown heavy silt loam subsoil. The Providence soils are also moderately well drained. They have a dark-brown silt loam surface layer and a brownish silty clay loam subsoil. Ora soils are well drained and moderately well drained and have a dark grayish-brown loam surface layer and a yellowish-red sandy clay loam subsoil.

In this association about equal areas are occupied by trees, pasture, row crops, and idle land. Much of the acreage in trees is in stands of mixed scrub oak and pine. Pasture seems to be the most economical use. The row crops are primarily cotton and corn cultivated in small fields. Most of the farms in this association are less than 100 acres in size.

2. Ora-Savannah-Ruston Association

Moderately well drained and well drained, gently sloping, loamy soils with a fragipan, on ridges; and well drained, sloping to steep, loamy soils on side slopes

This association is on broad, gently sloping ridges and sloping to steep side slopes. It occurs throughout the county and amounts to about 5 percent of the total acreage.

Ora soils make up about 30 percent of this association; the Savannah soils, 30 percent; and the Ruston soils, 25 percent. The remaining 15 percent consists of the somewhat poorly drained Pheba soils, the well drained Ochlockonee soils, and the moderately well drained Iuka and Shubuta soils.

The major soils in this association are acid. They developed in loamy materials on ridges and side slopes. The Ora soils are moderately well drained and well drained. They have a dark grayish-brown loam surface layer and a yellowish-red sandy clay loam subsoil that con-

tains a fragipan. Savannah soils also have a fragipan, but their subsoil is dominantly yellowish brown. They are moderately well drained. Ruston soils do not have a fragipan. They are well drained and have a very dark grayish-brown and dark grayish-brown fine sandy loam surface layer.

The soils on ridges in this association are about equally occupied by trees, row crops, pasture, and idle land. The side slopes are mostly in trees, but some are in pasture. In this association the farms are operated by families and are 100 acres or less in size.

3. Ora-Ruston Association

Moderately well drained and well drained, loamy soils on gently sloping ridges and strongly sloping to very steep side slopes

This association is on narrow to broad, gently sloping ridges and strongly sloping to very steep side slopes. It occurs throughout the county and accounts for about 58 percent of the total acreage.

The Ora soils make up 50 percent of this association, and the Ruston soils, 45 percent. The remaining 5 percent consists of the well drained Ochlockonee soils, the moderately well drained Iuka and Shubuta soils, and the somewhat poorly drained Mantachie soils.

The major soils in this association developed in loamy materials. The Ora soils are moderately well drained and well drained. They have a very dark gray to dark grayish-brown loam to silt loam surface layer. A fragipan consisting of strong-brown to red loam to sandy loam occurs at a depth of 20 to 26 inches. The Ruston soils are well drained and have a very dark grayish-brown to dark grayish-brown fine sandy loam surface layer. Their subsoil is strong-brown to yellowish-red, friable loam to sandy clay loam.

This association is used mostly for row crops, pasture, and trees. Large areas are used for cotton, corn, and other row crops. Most of the dairying and beef-cattle raising in the county is carried out on this association.

Parks, playgrounds, golf courses, and wildlife habitat are suitable on most of these soils for they have medium texture, rapid percolation, and good drainage. Because they provide stable foundations for streets and buildings, they are good sites for houses and commercial buildings.

4. Ruston-Ora Association

Chiefly well-drained, loamy soils on gently sloping ridges and sloping to very steep side slopes

This association is on broad and narrow ridges and sloping to very steep side slopes. It occurs in the eastern and southern parts of the county and amounts to about 15 percent of the acreage.

The Ruston soils make up about 63 percent of this association, and the Ora soils, about 32 percent. The remaining 5 percent consists of the well drained Ochlockonee and Saffell soils, the moderately well drained Iuka and Shubuta soils, and the well drained to excessively drained Lucy soils.

The major soils in this association developed in loamy materials. The Ruston soils are well drained and have a very dark grayish-brown to dark grayish-brown fine sandy loam surface layer and a strong-brown to yellowish-red loam to sandy clay loam subsoil. The Ora soils are moderately well drained and well drained and have a very dark gray to dark grayish-brown loam to silt loam surface layer. At a depth of 20 to 26 inches is a fragipan consisting of strong-brown to red loam to sandy loam.

Most of this association is used for general farming, beef and dairy cattle, and pine trees. The soils are generally well suited to row crops, forage crops, and trees.

Parks, playgrounds, campsites, golf courses, and wildlife habitat are suitable uses for most of these soils because they have medium texture, rapid percolation, and good drainage. Natural recreation areas can be developed. Because these soils provide stable foundations for streets and buildings, they are good sites for houses and commercial buildings.

5. Ora-Guin-Ruston Association

Moderately well drained and well drained, gently sloping, loamy soils with a fragipan, on ridges; and well drained, steep and very steep, gravelly and loamy soils on side slopes

This association is on narrow to broad, gently sloping ridges and steep and very steep side slopes. It occurs in the western part of the county and amounts to about 1 percent of the total acreage.

The Ora soils make up about 35 percent of this association; the Guin soils, about 30 percent; and the Ruston soils, about 30 percent. The remaining 5 percent consists of well drained Saffell and Ochlockonee soils and the moderately well drained Iuka soils.

The major soils in this association developed from loamy or loamy and gravelly materials. The Ora soils are moderately well drained and well drained. They have a very dark gray to dark grayish-brown loam to silt loam surface layer and a fragipan at a depth of 16 to 24 inches. The Guin soils are well drained and have a very dark gray to black gravelly sandy loam surface layer. The gravel increases in amount below the surface. The Ruston soils are also well drained but have a very dark grayish-brown to dark grayish-brown fine sandy loam surface layer and a yellowish-red sandy clay loam subsoil.

Most of this association is in trees, but a small part on the ridges is in pasture and crops. The slope and the gravel limit the use of the steeper areas to trees.

The soils in this association are suitable for playgrounds, campsites, or parks. Natural recreation areas can be developed.

6. Ruston-Lucy Association

Deep, well-drained, loamy and sandy soils on ridges and steep to very steep side slopes

This association is in the southeastern part of the county on narrow ridges and steep to very steep side slopes. It makes up about 5 percent of the county.

The Ruston soils occupy 55 percent of this association, and the Lucy soils, 40 percent. The remaining 5 percent consists of well drained Ochlockonee, Guin, and Saffell soils and the moderately well drained Iuka soils.

The major soils in this association developed from loamy or sandy materials. The Ruston soils are well drained and have a very dark grayish-brown to dark grayish-brown

fine sandy loam surface layer and a yellowish-red sandy clay loam subsoil. The Lucy soils are also well drained to excessively drained but have a very dark grayish-brown to black loamy sand surface layer 18 to 30 inches thick.

Most of this association is in trees, but a small acreage on the ridges is in pasture or is used for crops. Because the soils in most of this association are steep, they are better suited to trees than to pasture or crops.

The soils in this association contain some areas suitable for playgrounds, campsites, and parks. Natural recreation areas can be developed.

7. Cascilla-Collins-Falaya Association

Well-drained to somewhat poorly drained, loamy soils in recent alluvium on flood plains

This association is along the streams in the northern part of the county and amounts to about 1 percent of the total acreage.

The Cascilla soils make up about 40 percent of this association; the Collins soils, 30 percent; and the Falaya soils, 25 percent. The remaining 5 percent consists of the well drained Ochlockonee soils, the moderately well drained Iuka soils, and the somewhat poorly drained Mantachie soils.

The Cascilla soils are well drained and have a very dark grayish-brown to dark-brown silt loam surface layer. The Collins soils are moderately well drained and have a very dark brown to dark-brown silt loam surface layer. They are mottled with gray at a depth of about 18 to 20 inches. Falaya soils have a very dark grayish-brown to brown silt loam surface layer. They are somewhat poorly drained and are mottled with gray below the surface layer.

Most of this association is in pasture, but a small acreage is in row crops and trees. Frequent floods that last a short time prevent the use of more land for row crops.

8. Mantachie-Ochlockonee-Wehadkee Association

Well-drained to poorly drained, loamy soils in recent alluvium on flood plains

This association occurs along the larger streams throughout the county. It amounts to about 6 percent of the land area.

The Mantachie soils make up about 46 percent of this association; the Ochlockonee soils, about 29 percent; and the Wehadkee soils, about 16 percent. The remaining 9 percent of the association consists of the moderately well drained Iuka and Prentiss soils, the well drained Rumford soils, and the excessively drained Bruno soils and Sandy alluvial land.

The major soils in this association developed in loamy alluvial materials. The Mantachie soils are somewhat poorly drained and have a dark grayish-brown to grayish-brown fine sandy loam to loam surface layer. These soils are mottled with gray at a depth of about 5 inches. The Ochlockonee soils are well drained. They have a very dark grayish-brown to dark grayish-brown fine sandy loam to silt loam surface layer; the underlying layers are pale brown to dark yellowish brown or strong brown. The Wehadkee soils are poorly drained. They have a light brownish-gray to very dark grayish-brown loam to silt loam surface layer underlain by gray loamy material at a depth of 4 to 10 inches.

Most of this association is still in trees, but a small acreage is in pasture. Frequent flooding prevents the use of more areas for row crops and pasture.

9. Wehadkee-Mantachie Association

Poorly drained and somewhat poorly drained, loamy soils in recent alluvium on flood plains

This association occurs in the southeastern part of the county and occupies about 2 percent of the land area.

The Wehadkee soils make up about 60 percent of this association, and the Mantachie soils, about 40 percent. Also in this association are small areas of moderately well drained Iuka soils and somewhat poorly drained Stough soils.

The major soils in this association developed in loamy alluvial materials. The Wehadkee soils are poorly drained. They have a light brownish-gray to very dark grayish-brown loam to silt loam surface layer that is underlain by gray loamy material at a depth of 4 to 10 inches. The Mantachie soils are somewhat poorly drained. They have a surface layer of dark grayish-brown to grayish-brown fine sandy loam to loam and are mottled with gray at a depth of about 5 inches.

Most of this association is still in trees. Frequent flooding and standing water prevent use for row crops and pasture.

10. Prentiss-Stough-Cahaba Association

Moderately well drained and somewhat poorly drained, loamy soils with a weak fragipan, and well drained, friable, loamy soils; on gently sloping stream terraces

This association is on terraces along the Bogue Chitto River and McGee Creek in the southwestern part of the county. It amounts to about 2 percent of the county.

The Prentiss soils make up about 35 percent of this association; the Stough soils, about 32 percent; and the Cahaba soils, about 23 percent. The remaining 10 percent consists mostly of Myatt soils, but there are small areas of the well-drained Rumford soils and the poorly drained Mashulaville and Wehadkee soils.

The major soils in this association developed in loamy materials; most of them have a fragipan. The Prentiss soils are moderately well drained. They have a surface layer of very dark grayish-brown to brown fine sandy loam and loam that is underlain by yellowish-brown and dark-brown fine sandy loam. The Stough soils are somewhat poorly drained. They have a surface layer of very dark grayish-brown to very dark gray fine sandy loam to loam that is underlain by mottled yellowish-brown, friable loam. A weak fragipan occurs in the Prentiss soils at a depth of 18 to 24 inches, and in the Stough soils at 14 to 18 inches. The Stough soils are somewhat poorly drained. The well-drained Cahaba soils have a dark grayish-brown to very dark grayish-brown fine sandy loam surface layer that is underlain by yellowish-red sandy clay loam.

In this association, most areas of the Prentiss and Cahaba soils are in row crops or pasture, but most areas of the other soils are in trees. Row crops, forage crops, and trees are suited to the soils in this association.

Use and Management of Soils

The soils of Walthall County are used extensively for crops, trees, and tame pasture. This section explains how the soils can be managed for these main purposes and also for wildlife, for woodland grazing, and in the building of highways, farm ponds, and other engineering structures. Also discussed are uses of soils in community development.

The management of crops and pasture, of woodland for wood products, and of woodland grazing is discussed by groups of soils. To determine the soils in each of these groups, refer to the "Guide to Mapping Units" at the back of this survey.

Crops and Tame Pasture

This subsection describes general practices of soil management, explains capability classification, and discusses management by capability groups of soils. Also in this subsection is a table that gives estimated yields of important crops and pasture grasses under a high level of management.

General practices of management

Practices of management that apply to practically all of the soils in Walthall County are (1) using a suitable cropping system in which crop residue is returned to the soil; (2) establishing terraces, contour tillage, and grassed waterways; (3) using good practices of tillage, and (4) applying adequate amounts of fertilizer and lime. On most soils in the county two or more of these practices are needed.

In most places the cropping system should provide a cover crop. The cover crop helps control erosion and maintain the supply of organic matter. The crop should be planted early in fall and allowed to grow as late in spring as is practical. A suitable cropping system is especially needed on gently sloping to sloping soils because it lessens the amount of soil lost through erosion. A loss of surface soil reduces the supply of organic matter and plant nutrients. It also lessens the rate that water is taken into the soil. Then more water runs off, erosion increases, and the supply of available moisture decreases.

The degree of erosion depends on the steepness and length of the slopes, on the texture, structure, and permeability of the soil, and on the plant cover. Practices that lessen erosion are (1) establishing terraces on slopes of less than 8 percent; (2) seeding the waterways to suitable native and tame grasses; (3) diverting water that runs from higher areas; (4) tilling and planting on the contour; (5) using crop residue effectively; (6) installing drains and other structures; and (7) arranging crop rows so that they help control erosion and improve drainage.

Good tillage includes preventing a plowpan from forming just below the depth of plowing. This pan can be prevented by varying the depth of plowing. Seeding deep-rooted legumes is also helpful in preventing plowpans.

Most of the soils in the county require fertilizer. Nitrogen is the main element needed, but some crops, particularly legumes, need lime. The amount of lime needed, as well as the amount of phosphate and potash, can be determined by testing the soil. Information on collecting soil samples can be obtained from a local representative of the Soil Conservation Service, from the county agent, or from other local agricultural workers.

In the past 20 years the acreage in improved pasture and hay in the county has increased as the raising of livestock has increased. Long-term grazing depends mostly on improved pasture in perennial grasses and legumes. Some pastures are rotated with field crops. Small grain, ryegrass, millet, or other annual crops are suitable feed for finishing feeder cattle, and they can also be used to supplement the forage in perennial pasture grazed by dairy cows.

The most practical mixture for seeding permanent pasture is one that includes both a legume and a perennial grass, such as bahiagrass, bermudagrass, or tall fescue. The legume supplies nitrogen that the grass needs for improving its quality (fig. 2).

Capability groups of soils

The capability classification is the grouping of soils to show, in a general way, their suitability for most kinds of farming. It is a practical classification based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment. The soils are classified according to degree and kind of permanent limitation, but without consideration of major and generally expensive landforming that would change the slope, depth, or other characteristics of the soils; and without consideration of possible but unlikely major reclamation projects.

In the capability system, all kinds of soils are grouped at three levels, the capability class, subclass, and unit. These are discussed in the following paragraphs.

Capability Classes, the broadest grouping, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I. Soils have few limitations that restrict their use.

Class II. Soils have some limitations that reduce the choice of plants or require moderate conservation practices.

Class III. Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV. Soils have very severe limitations that restrict the choice of plants, require very careful management, or both.

Class V. Soils subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, woodland, or wildlife food and cover.

Class VI. Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, woodland, or wildlife food and cover.

Class VII. Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife.

Class VIII. Soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes. There are no soils in class VIII in Walthall County.

Capability Subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*,

Figure 2.—**A pasture of crimson clover and bahiagrass on Ruston fine sandy loam, 2 to 5 percent slopes, eroded.**

to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, but not in Walthall County, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only subclasses indicated by *w*, *s*, and *c*, because the soils in it are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, woodland, wildlife, or recreation.

Capability Units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–2 or IIIe–5. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation, and the small letter indicates the subclass, or kind of limitation. The Arabic numeral specifically identifies the capability unit within each subclass.

Management by capability units

A capability unit is made up of soils that have about the same limitations to use and susceptibility to damage and need about the same kind of management. In the following pages each capability unit is described, and management for each is suggested. The soils in each capability unit can be found by referring to the "Guide to Mapping Units" at the back of this survey.

CAPABILITY UNIT I–1

This capability unit consists of nearly level, well-drained, acid soils. These soils have a surface layer of very friable fine sandy loam and a subsoil of light sandy clay loam that is underlain by sandy loam.

Water moves into and through these soils at a moderate to rapid rate. The penetration of roots is not restricted. Organic-matter content and natural fertility are low. These soils are easily worked.

The soils in this unit are used mostly for row crops and pasture, but a small acreage is wooded. These soils are well suited to cotton, corn, soybeans, vegetables, small grain, bahiagrass, Coastal bermudagrass, common bermudagrass, annual lespedeza, crimson clover, and white clover and to adapted hardwoods and pines. Crop response to lime and fertilizer is good. Because runoff is slow and erosion is slight, these soils can be used for clean-tilled crops continuously if crop residue is managed well.

CAPABILITY UNIT IIe–1

This capability unit consists of gently sloping, well-drained, acid soils on uplands. These soils have a surface layer of very friable fine sandy loam and a subsoil of sandy clay loam that is underlain by sandy loam. Erosion is slight or moderate.

Water moves into and through these soils at a moderate to rapid rate. The penetration of roots is not restricted. Runoff is moderate and erosion is a hazard in cultivated areas. Organic-matter content and natural fertility are low. These soils are easy to work, but they crust and pack when bare.

About equal acreages of the soils in this unit are in row crops, pasture, and trees. These soils are well suited to cotton, corn, sweetpotatoes, truck crops, and small grain. Well-suited pasture plants are bahiagrass, Coastal bermudagrass, common bermudagrass, annual lespedeza, crimson clover, and white clover. Adapted hardwoods and pines grow well.

At a high level of management, yields of crops and pasture plants are favorable (fig. 3). Crops respond well to lime and fertilizer.

Management is needed that controls erosion, adds organic matter, and increases fertility. If erosion is controlled, clean-tilled crops can be grown continuously. Cropping systems that slow runoff are needed. An example of a suitable cropping system is 2 years of small grain and lespedeza followed by 2 years of row crops.

CAPABILITY UNIT IIe–2

This capability unit consists of gently sloping, moderately well drained and well drained, acid soils that have a fragipan at a depth of about 18 to 28 inches. These soils have a surface layer of very friable fine sandy loam, loam, or silt loam and a subsoil of sandy clay loam, clay loam, silty clay loam, or loam. Erosion is slight or moderate.

Infiltration into these soils is moderate, and permeability is moderate in the upper part of the subsoil but is restricted

***Figure 3.*—Winter wheat in foreground and stand of shortleaf pine in background. The soil is Ruston fine sandy loam, 2 to 5 percent slopes.**

259-825—67——2

in the fragipan. The fragipan slows the penetration of roots. Runoff is moderate, and erosion is a hazard in cultivated areas. Organic-matter content and natural fertility are low. These soils are somewhat droughty in summer. They are easy to work, but they crust and pack when bare. Plowpans are likely to form if the depth of plowing is not varied.

The soils in this unit are used mostly for pasture and trees, but a small acreage is in row crops. Well-suited crops and pasture plants are cotton, corn, sweetpotatoes, small grain, cucumbers, Coastal bermudagrass, tall fescue, bahiagrass, wild winter peas, vetch, annual lespedeza, and white clover. Adapted hardwoods and pine trees grow well. At a high level of management, yields of crops and pasture plants are favorable. Crops respond moderately well to lime and fertilizer.

Management is needed that controls erosion, adds organic matter, and increases fertility (fig. 4). If erosion is controlled, clean-tilled crops can be grown continuously. Cropping systems that slow runoff are needed. An example of a suitable cropping system is 2 years of small grain and lespedeza followed by 2 years of row crops.

CAPABILITY UNIT IIe-3

Providence silt loam, 2 to 5 percent slopes, eroded, is the only soil in this capability unit. This gently sloping, moderately well drained, acid soil is on uplands. The surface layer is friable silt loam. The subsoil is silty clay loam that contains a fragipan at a depth of about 19 to 24 inches and is underlain by clay loam. Erosion is slight or moderate and is a hazard in cultivated areas.

Infiltration is moderate. Permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. The fragipan slows the penetration of roots. This soil is somewhat droughty in summer. Runoff is medium, and erosion is a hazard in cultivated areas. Organic-matter

Figure 4.—**Contour tillage in a terraced field on Ora loam, 2 to 5 percent slopes.**

content is low, and natural fertility is low or medium. This soil is easy to work, but it crusts and packs when bare. Plowpans are likely to form if the depth of plowing is not varied.

This soil is used mainly for pasture and row crops, but some small areas are in trees. At a high level of management, favorable yields of all commonly grown crops and pasture plants can be produced. Cotton, corn, sweetpotatoes, and small grain are well suited. Suitable pasture plants are Coastal bermudagrass, bermudagrass, tall fescue, bahiagrass, wild winter peas, vetch, annual lespedeza, dallisgrass, and white clover. Adapted hardwoods and pines grow well. The response of crops to lime and fertilizer is good.

Management is needed that controls erosion, increases fertility, and adds organic matter. If erosion is controlled, clean-tilled crops can be grown continuously. Cropping systems that slow runoff are needed. An example of a suitable cropping system is 2 years of small grain and lespedeza followed by 2 years of row crops.

CAPABILITY UNIT IIw–1

Cascilla silt loam is the only soil in this capability unit. This nearly level, well-drained, acid soil is on bottom lands and is likely to be flooded in periods of heavy rainfall. The surface layer and layers underlying it are silt loam that is free of mottles to a depth of at least 30 inches. Erosion is slight. Water moves into and through these soils at a moderate rate. The penetration of roots is not restricted. Organic-matter content is low, and natural fertility is medium. This soil is easy to work, but it crusts and packs when bare.

With surface drainage and a high level of management, all crops and pasture plants commonly grown in the county produce favorable yields. Cotton, corn, sugarcane, small grain, and truck crops are well suited. Well-suited pasture plants are fescue, bahiagrass, Coastal bermudagrass, dallisgrass, annual lespedeza, wild winter peas, and white clover. Adapted hardwoods and loblolly pines grow well.

If this soil is adequately drained, clean-tilled crops can be grown continuously. Cultivated crops may be damaged by flooding. Surface drainage is needed in the lower lying areas.

CAPABILITY UNIT IIw–2

The only soil in this capability unit is Collins silt loam. It is on bottom lands and is nearly level, moderately well drained, and acid. The silt loam surface layer is underlain by silt loam that is gleyed gray at a depth of 18 to 25 inches. Erosion is slight, but some areas are damaged by scouring and sedimentation. Infiltration is moderate. Permeability is moderate above the gray, gleyed layer but is restricted in it. This layer also slows the penetration of roots. Organic-matter content is low, and natural fertility is medium. This soil is easy to work, but it crusts and packs when bare.

Most of this soil is used for trees and pasture, but a small acreage is in row crops. With adequate drainage and a high level of management, favorable yields of all commonly grown crops and pasture plants can be produced. Crop response to lime and fertilizer is good. Cotton, corn, sugarcane, small grain, and truck crops are well suited. Well-suited pasture plants are tall fescue, bahiagrass, Coastal bermudagrass, dallisgrass, annual lespedeza, wild winter peas, and white clover. Adapted hardwoods and loblolly pines grow well.

If drainage is adequate, this soil can be used continuously for clean-tilled crops. Flooding, however, is a moderate hazard in clean-tilled areas. Surface drainage is needed in low areas.

CAPABILITY UNIT IIw–3

Falaya silt loam is the only soil in this capability unit. This nearly level, somewhat poorly drained, acid soil occurs on bottom lands and is subject to flooding. The surface layer is friable silt loam. It is underlain by silt loam that is gleyed gray at a depth of 11 to 18 inches.

Infiltration is moderate. Permeability is moderate in the upper part of the subsoil but is restricted in the gray, gleyed layer. Organic-matter content is low, and natural fertility is medium. This soil is easy to work, but it crusts and packs when bare. Plowpans are likely to form if the depth of plowing is not varied. Flooding is a moderate hazard, and some areas are damaged by scouring and sedimentation.

Most of this soil is in trees, but some areas are in pasture. If drainage is adequate and management is good, favorable yields of crops and pasture plants can be produced. Corn, sugarcane, small grain, and truck crops are well suited. The response of crops to lime and fertilizer is good. Well-suited pasture plants are bahiagrass, dallisgrass, annual lespedeza, wild winter peas, and white clover. Hardwoods and loblolly pines grow well.

If areas of this soil are adequately drained, clean-tilled crops can be grown continuously. Flooding, however, is likely to damage row crops moderately. Surface drainage is needed in the low areas.

CAPABILITY UNIT IIw–4

Only Mantachie soils are in this capability unit. These nearly level, somewhat poorly drained, acid soils are on bottom lands. The surface layer is loam to fine sandy loam and is underlain by fine sandy loam, sandy loam, or loam. A gray, gleyed layer is at a depth of 11 to 18 inches.

Infiltration is moderate. Permeability is moderate above the gray, gleyed layer but is restricted in it. This gleyed layer slows the penetration of roots. Organic-matter content and natural fertility are low. These soils can be worked easily, but they crust and pack when bare.

These soils are mostly in hardwood trees and pasture, but a small acreage is in row crops.

If drainage is adequate and management is good, favorable yields of most crops and pasture can be produced. Corn, truck crops, sugarcane, and small grain are well suited. Crops respond well to lime and fertilizer. Well-suited pasture plants are bahiagrass, tall fescue, Coastal bermudagrass, annual lespedeza, wild winter peas, and white clover. Hardwoods and loblolly pines grow well.

Clean-tilled crops can be grown continuously if these soils are adequately drained. Flooding, however, is a moderate hazard. Surface drainage is needed in low areas.

CAPABILITY UNIT IIw–5

Only Ochlockonee-Iuka soils are in this capability unit. These nearly level, well drained and moderately well drained, acid soils are on bottom lands. Their surface layer of very friable sandy loam, loam, or silt loam is underlain by sandy loam and loam to loamy sand.

Water moves into and through these soils at a moderate to rapid rate. Organic-matter content and natural fertility are low. These soils are easily worked. Flooding is a moderate hazard, but the floodwaters quickly recede. Some areas are likely to be damaged by sedimentation and scouring.

Trees grow on most of the acreage, but some areas are used for crops and pasture. If drainage is adequate and if management is good, favorable yields of all crops and pasture plants can be produced. Cotton, corn, truck crops, sugarcane, small grain, and watermelons are well suited. Crops respond to lime and fertilizer. Well-suited pasture plants are bermudagrass, bahiagrass, crimson clover, Coastal bermudagrass, annual lespedeza, wild winter peas, and white clover. Hardwoods and loblolly pines grow well.

If these soils are adequately drained, clean-tilled crops can be grown continuously. Row crops may be moderately damaged by flooding. Surface drainage is needed in low areas.

CAPABILITY UNIT IIw–6

This capability unit consists of nearly level to gently sloping, moderately well drained, acid soils that occur on uplands and have a fragipan at a depth of 16 to 22 inches. The surface layer is silt loam. The subsoil is silty clay loam and silt loam in the upper part and silt loam, loam, or clay loam in the lower part. Erosion is slight or moderate.

Infiltration is moderate to slow. Permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. The fragipan slows the penetration of roots. These soils are droughty in summer. They are wet in periods of heavy rainfall but do not remain wet long. They can be easily worked when dry, but they crust and pack when bare. Plowpans form readily.

The soils in this unit are used mostly for pasture and trees, but a small acreage is in row crops. At a high level of management, favorable yields of shallow-rooted crops and pasture plants can be produced. Corn, and small grain are well suited. Crops respond well to lime and fertilizer. Well-suited pasture plants are Coastal bermudagrass, bermudagrass, bahiagrass, tall fescue, wild winter peas, vetch, annual lespedeza, and white clover. Hardwoods and pines grow well.

Management is needed that controls erosion, provides drainage, adds organic matter, and increases fertility. If these soils are adequately drained and erosion is controlled, clean-tilled crops can be grown year after year. A cover crop should be seeded after each crop is harvested. Surface drainage and cropping systems that slow runoff are needed. An example of a suitable cropping system is 4 years of a sod crop followed by 2 years of row crops.

CAPABILITY UNIT IIw–7

This capability unit consists of nearly level, moderately well drained, acid soils that have a fragipan at a depth of about 18 to 28 inches. The surface layer of these soils is very friable sandy loam and silt loam, and the subsoil is loam, sandy clay loam, and clay loam. Erosion is slight.

Infiltration is moderate. Permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. The fragipan slows the penetration of roots. These soils are somewhat droughty in summer. Organic-matter content is low, and natural fertility is low to medium. These soils are easy to work, but they crust and pack when bare. Plowpans are likely to form if the depth of plowing is not varied.

The soils in this unit are used mostly for pasture and trees, but small acreage is in row crops. At a high level of management, favorable yields of most crops and pasture plants can be produced. These soils are well suited to cotton, corn, sweetpotatoes, small grain, and cucumbers. Crop response to lime and fertilizer is good. Well-suited pasture plants are Coastal bermudagrass, tall fescue, bahiagrass, wild winter peas, vetch, annual lespedeza, and white clover. Hardwoods and pine trees grow well.

Management is needed that provides drainage, controls erosion, adds organic matter, and increases fertility. If these soils are adequately drained and erosion is controlled, clean-tilled crops can be grown year after year. Also suitable is a cropping system consisting of 2 years of small grain and lespedeza followed by 2 years of row crops.

CAPABILITY UNIT IIs–1

Rumford fine sandy loam, 0 to 2 percent slopes, is the only soil in this capability unit. This soil is nearly level, acid, and well drained to somewhat excessively drained. Its fine sandy loam surface soil is underlain by sandy loam and loamy sand. Erosion is slight.

Infiltration is moderate to rapid, and permeability is rapid throughout the subsoil. This soil is somewhat droughty, but it is easily worked. Organic-matter content and natural fertility are low. Most of this soil is used for pasture and row crops, but a small acreage is in trees.

At a high level of management, favorable yields of most crops and pasture plants can be produced. Cotton, corn, peanuts, watermelons, and small grain are well suited. Well-suited pasture plants are Coastal bermudagrass, bermudagrass, bahiagrass, wild winter peas, vetch, crimson clover, and white clover. Adapted hardwoods and pines grow well.

Management is needed that increases fertility, adds organic matter, and controls erosion. Clean-tilled crops can be grown continuously if the crop residue is well managed. Cropping systems that slow runoff are needed. An example of a suitable cropping system is 2 years of small grain and lespedeza followed by 2 years of row crops.

CAPABILITY UNIT IIIe–1

This capability unit consists of moderately sloping, moderately well drained to well drained, acid soils that occur on uplands and have a fragipan at a depth of 18 to 26 inches. The surface layer is friable loam to silt loam, and the subsoil is sandy clay loam, loam, and clay loam. Erosion is slight or moderate.

Infiltration is moderate. Permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. Organic-matter content and natural fertility are low. These soils are somewhat droughty in summer. They are easy to work, but they crust and pack when bare. Plowpans are likely to form if the depth of plowing is not varied.

The soils in this unit are used mostly for pasture and trees, but a small acreage is in row crops. At a high level of management, favorable yields of most crops and pasture plants can be produced. Cotton, corn, soybeans, grain sorghum, and small grain are well suited. Well-suited pasture plants are bermudagrass, bahiagrass, tall fescue,

dallisgrass, sudangrass, wild winter peas, vetch, annual lespedeza, crimson clover, and white clover. Crop response to lime and fertilizer is good. Adapted hardwoods and pines grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. Cropping systems that slow runoff and control erosion should be used. If erosion is controlled, clean-tilled crops and close-growing crops can be grown in about equal amounts. For example, a small grain and lespedeza can be grown for 2 years and followed by 2 years of row crops. A cover crop is needed after each row crop is harvested. In another suitable cropping system, a sod crop or sericea lespedeza can be grown for 4 years and followed by 2 years of row crops.

CAPABILITY UNIT IIIe–2

Ora loam, 2 to 5 percent slopes, severely eroded, is the only soil in this capability unit. This gently sloping, moderately well drained, severely eroded, acid soil has a fragipan at a depth of 20 to 26 inches. The loam surface layer is underlain by a subsoil of sandy clay loam, clay loam, and sandy loam.

Infiltration is moderate to slow. Permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. The fragipan slows the penetration of roots. This soil is somewhat droughty in summer. It has low organic-matter content and low to medium natural fertility. It crusts and packs when bare. Plowpans are likely to form if the depth of plowing is not varied.

Most of this soil was once used for row crops, but it is now mostly in native grasses and pine trees. Only a small acreage is in row crops. At a high level of management, this soil is fairly well suited to most crops and pasture plants commonly grown in the county. Cotton, corn, soybeans, grain sorghum, small grain, and truck crops are suited. Crops respond moderately well to lime and lespedeza. Suitable pasture plants are bermudagrass, bahiagrass, wild winter peas, vetch, annual lespedeza, sericea lespedeza, and crimson clover. Pine trees grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. Cropping systems that slow runoff are needed. If erosion is controlled, clean-tilled crops and close-growing crops can be grown in about equal amounts. For example, a small grain or lespedeza can be grown for 2 years and followed by 2 years of row crops. In another suitable cropping system, a sod crop and sericea lespedeza can be grown for 4 years and followed by 2 years of row crops.

CAPABILITY UNIT IIIe–3

Providence silt loam, 5 to 8 percent slopes, eroded, is the only soil in this capability unit. This soil is on uplands and is acid, moderately sloping, and moderately well drained. It has a fragipan at a depth of 22 to 29 inches. The surface layer is silt loam, and the subsoil is silty clay loam underlain by clay loam or sandy clay loam. Erosion is slight to moderate.

Infiltration into this soil is moderate. Permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. The fragipan slows the penetration of roots. Organic-matter content is low, and natural fertility is medium. This soil is easy to work, but it crusts and packs when bare. Plowpans form if the depth of plowing is not varied.

Most of this soil is in pasture, but a small part is in trees and row crops. At a high level of management, favorable yields of most crops and pasture plants can be produced. Cotton, corn, soybeans, grain sorghum, and small grain are well suited. Crop response to lime and fertility is good. Well-suited pasture plants are Coastal bermudagrass, common bermudagrass, bahiagrass, tall fescue, wild winter peas, vetch, annual lespedeza, sericea lespedeza, crimson clover, white clover, sudangrass, and millet. Adapted hardwoods and pines grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. If erosion is controlled, clean-tilled crops and close-growing crops can be grown in about equal amounts. For example, a small grain and lespedeza can be grown for 2 years and followed by 2 years of row crops. In another suitable cropping system, 4 years of sod crops is followed by 2 years of row crops.

CAPABILITY UNIT IIIe–4

Ruston fine sandy loam, 5 to 8 percent slopes, eroded, is the only soil in this capability unit. This is a moderately sloping, well-drained, acid soil on uplands. The surface layer is very friable fine sandy loam, and the subsoil is sandy clay loam underlain by sandy loam. Erosion is slight to moderate.

Water moves into and through this soil at a moderate to rapid rate. The penetration of roots is not restricted. Organic-matter content and natural fertility are low. This soil is easily worked, but it crusts and packs when bare.

This soil is used about equally for pasture and row crops. At a high level of management, favorable yields of all commonly grown crops and pasture grasses can be produced. Cotton, corn, soybeans, grain sorghum, and small grain are well suited. Crop response to lime and fertilizer is good. Well-suited pasture plants are bermudagrass, bahiagrass, tall fescue, dallisgrass, sudangrass, wild winter peas, vetch, annual lespedeza, crimson clover, and white clover. Hardwoods and pines grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. If erosion is controlled, clean-tilled crops and close-growing crops can be grown in about equal amounts. For example, a small grain and lespedeza can be grown for 2 years and followed by 2 years of row crops. Cover crops are needed after each row crop is harvested. In another suitable cropping system, 4 years of sod crops and sericea lespedeza is followed by 2 years of row crops.

CAPABILITY UNIT IIIe–5

Saffell gravelly fine sandy loam, 2 to 8 percent slopes, eroded, is the only soil in this capability unit. This soil is acid, moderately sloping, and well drained. It has a gravelly fine sandy loam surface layer and a gravelly sandy clay loam subsoil. The underlying material is gravelly sandy loam or gravelly loamy sand. Erosion is slight or moderate.

Water moves into and through this soil rapidly. This soil is somewhat droughty but is easily worked. Organic-matter content and natural fertility are low. The gravel in the surface layer is likely to damage cultivating tools.

This soil is mostly in trees and pasture, but a small part is in row crops. At a high level of management, favorable yields of most crops and pasture plants can be produced. Cotton, corn, soybeans, small grain, truck crops, and or-

chard fruits are well suited. Crops respond fairly well to lime and fertilizer. Well-suited pasture plants are bermudagrass, Coastal bermudagrass, sudangrass, millet, and crimson clover. Hardwoods and pines grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. If erosion is controlled, a cropping system can be used in which equal amounts of clean-tilled crops and close-growing crops are grown. For example, close-growing crops can be grown for 2 years and are followed by 2 years of row crops. Also suitable is 4 years of pasture or sericea lespedeza followed by 2 years of row crops. A cover crop is needed after each row crop is harvested.

CAPABILITY UNIT IIIw–1

Bude silt loam, 0 to 2 percent slopes, is the only soil in this capability unit. This nearly level, somewhat poorly drained, acid soil has a fragipan at a depth of 14 to 18 inches. The silt loam surface layer is underlain by a loam subsoil. Erosion is slight.

Infiltration into this soil is slow to moderate, and permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. This soil is wet in periods of heavy rainfall and is dry and droughty in dry periods. Organic-matter content is low, and natural fertility is low. This soil can be easily worked when dry, but it crusts and packs when bare.

Most of this soil is in pine and hardwood trees, but small areas have been cleared and are used for pasture and row crops. With adequate drainage and a high level of management, favorable yields of shallow-rooted row crops and pasture plants can be produced. Well-suited crops and pasture plants are corn, soybeans, grain sorghum, small grain, bermudagrass, bahiagrass, tall fescue, sudangrass, annual lespedeza, and white clover. Adapted hardwoods and pines are also well suited. Crops respond moderately well to lime and fertilizer.

Management is needed that provides drainage, adds organic matter, and increases fertility. Excess surface water can be disposed of by using contour tillage, properly arranged rows, sodded waterways, and diversion terraces. Drained areas are suitable for row crops if close-growing crops are grown most of the time. An example of a suitable cropping system is 3 years of small grain and lespedeza and 2 years of row crops. Cover crops are needed after a row crop is harvested. Undrained areas should be kept in perennial vegetation most of the time if contour tillage or other mechanical practices are not used.

CAPABILITY UNIT IIIw–2

This capability unit consists of nearly level, somewhat poorly drained, acid soils that have a fragipan at a depth of 11 to 17 inches. These soils have a surface layer of silt loam and fine sandy loam and a subsoil of silt loam, loam, and silty clay loam. Erosion is slight.

Infiltration is slow to moderate, and permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. These soils are wet in periods of heavy rainfall and are dry and droughty in dry periods. Organic-matter content is low, and natural fertility is low. These soils can be easily worked when dry but they crust and pack when bare. Plowpans are likely to form if the depth of plowing is not varied.

The soils in this unit are used mostly for pasture, but a small acreage is in trees and row crops. With adequate drainage and a high level of management, favorable yields of shallow-rooted row crops and pasture plants can be produced. Well-suited crops and pasture plants are corn, soybeans, grain sorghum, small grain, bermudagrass, bahiagrass, tall fescue, sudangrass, annual lespedeza, and white clover. Crop response to lime and fertilizer is moderately good. Adapted hardwoods and pines grow well.

Management is needed that controls erosion, provides drainage, increases fertility, and adds organic matter. Excess surface water can be disposed of and erosion controlled by using contour tillage, properly arranged rows, sodded waterways, and diversion terraces. On the longer slopes, terraces are needed. Drained areas are suitable for row crops if close-growing crops are grown most of the time. An example of a suitable cropping system is 3 years of small grain and lespedeza followed by 2 years of row crops. Cover crops are needed after a row crop is harvested. Undrained areas should be kept in perennial vegetation most of the time if contour tillage and other mechanical practices are not used.

CAPABILITY UNIT IVe–1

Ora loam, 8 to 12 percent slopes, eroded, is the only soil in this capability unit. This strongly sloping, moderately well drained, acid soil has a fragipan at a depth of 26 to 32 inches. The loam surface layer is underlain by a loam or sandy clay loam subsoil. Erosion is moderate.

Infiltration is slow, and permeability is moderate in the upper part of the subsoil but is restricted in the fragipan. The fragipan slows the penetration of roots. Organic-matter content is low, and natural fertility is low to medium. This soil is droughty in summer. It is easy to work, but it crusts and packs when bare.

The soil in this unit is used mostly for pasture and trees, but a small part is in row crops. At a high level of management, yields of most commonly grown crops and pasture plants are favorable. Cotton, corn, soybeans, grain sorghum, and small grain are well suited. Crops respond moderately well to lime and fertilizer. Well-suited pasture plants are bermudagrass, bahiagrass, tall fescue, dallisgrass, sudangrass, wild winter peas, vetch, annual lespedeza, crimson clover, and white clover. Hardwoods and pine trees grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. Cropping systems that slow runoff are needed. Clean-tilled crops can be grown if this soil is kept in perennial vegetation most of the time. An example of a suitable cropping system is 6 years of sod crops and 2 years of clean-tilled crops. A cover crop is needed after each clean-tilled crop is harvested.

CAPABILITY UNIT IVe–2

Ora loam, 5 to 8 percent slopes, severely eroded, is the only soil in this capability unit. This moderately sloping, moderately well drained, acid soil has a fragipan at a depth of 20 to 26 inches. The loam surface layer is underlain by a loam or sandy clay loam subsoil.

Infiltration is slow. Permeability is moderate in the upper subsoil but is restricted in the fragipan. The fragipan slows the penetration of roots. This soil is droughty in summer. It has low to medium natural fertility and low content of organic matter. It is easy to work, but it crusts and packs when bare. Plowpans are likely to form if the depth of plowing is not varied.

This soil was once used mostly for row crops, but it is now mostly used for pasture and trees. Only a small part is in row crops. At a high level of management, yields of most crops and pasture plants are only fair. Cotton, corn, soybeans, grain sorghum, and small grain are well suited. Crops respond moderately well to lime and fertilizer. Well-suited pasture plants are bermudagrass, bahiagrass, sudangrass, wild winter peas, vetch, crimson clover, and white clover. Hardwoods and pines grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. Cropping systems that slow runoff are needed. This soil is suitable for clean-tilled crops if close-growing crops are grown most of the time. An example of a suitable cropping system is 6 years of sod crops and 2 years of row crops. A cover crop should be seeded after each row crop is harvested.

CAPABILITY UNIT IVe-3

Only Ruston fine sandy loam, 8 to 12 percent slopes, eroded, is in this capability unit. This soil is strongly sloping, well drained, and acid. The subsoil is sandy clay loam and clay loam that is underlain by sandy loam. Erosion is slight to moderate.

Water moves into and through this soil at a moderate to rapid rate. Runoff is moderate to rapid, and erosion is a hazard in cultivated areas. Organic-matter content and natural fertility are low. This soil can be worked easily, but it crusts and packs when bare.

Most of this soil is in pasture and trees, but a small acreage is in row crops. At a high level of management, favorable yields of most crops and pasture plants can be produced. Cotton, corn, soybeans, grain sorghum, small grain, and truck crops are well suited. Crop response to lime and fertilizer is good. Suitable pasture plants are Coastal bermudagrass, bermudagrass, bahiagrass, tall fescue, sudangrass, millet, vetch, wild winter peas, lespedeza, and crimson clover. Orchard crops, tung trees, hardwoods, and pine trees are well adapted.

Management is needed that controls erosion, increases fertility, and adds organic matter. Cropping systems that slow runoff should be used. Clean-tilled crops can be grown on this soil if it is kept in perennial vegetation most of the time. An example of a suitable cropping system is 6 years of sod crops and 2 years of clean-tilled crops. A cover crop is needed after each clean-tilled crop is harvested.

CAPABILITY UNIT IVe-4

Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded, is the only soil in this capability unit. This moderately sloping, well-drained, acid soil has a very friable fine sandy loam surface layer. The subsoil is sandy clay loam underlain by sandy loam. Erosion is severe.

Infiltration is moderate. Permeability is moderate to rapid throughout the subsoil. Organic-matter content and natural fertility are low. This soil can be worked easily, but it crusts and packs when bare.

Most of this soil was once used for row crops, but it is now in native grasses and pine trees. Only a small acreage is in row crops. At a high level of management, fair yields of most of the commonly grown crops and pasture plants can be produced. Cotton, corn, soybeans, grain sorghum, and small grain are well suited. Crops respond moderately well to lime and fertilizer. Well-suited pasture plants are bermudagrass, bahiagrass, sudangrass, wild winter peas, vetch, crimson clover, and white clover. Hardwoods and pines grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter.

Cropping systems that slow runoff should be used. Clean-tilled crops can be grown if erosion is controlled and close-growing crops are grown most of the time. An example of a suitable cropping system is 6 years of sod and 2 years of row crops. A cover crop is needed after each row crop is harvested.

CAPABILITY UNIT IVe-5

Only Saffell gravelly fine sandy loam, 8 to 12 percent slopes, eroded, is in this capability unit. This well-drained, acid soil has a gravelly fine sandy loam surface layer underlain by gravelly sandy clay loam, gravelly sandy loam, or gravelly loamy sand. Erosion is moderate.

Water rapidly moves into and through this soil. This soil is somewhat droughty. It has low organic-matter content and natural fertility. It is fairly easy to work, but the gravel in the surface layer is likely to damage cultivating equipment.

This soil is used mostly for pasture and trees, but a very small acreage is in row crops. At a high level of management, fair yields of the most commonly grown crops and pasture plants can be produced. Cotton, corn, soybeans, grain sorghum, small grain, orchard fruits, and truck crops are well suited. Crop response to lime and fertilizer is fair. Well-suited pasture plants are bermudagrass, bahiagrass, Coastal bermudagrass, sudangrass, millet, and crimson clover. Hardwoods and pines grow well.

Management is needed that controls erosion, increases fertility, and adds organic matter. Cropping systems that slow runoff should be used. Clean-tilled crops can be grown, but this soil should be kept in perennial vegetation most of the time. An example of a suitable cropping system is 6 years of sod crops and 2 years of clean-tilled crops. A cover crop is needed after each clean-tilled crop is harvested.

CAPABILITY UNIT IVe-6

Only Shubuta and Boswell soils, 5 to 8 percent slopes, eroded, are in this capability unit. These soils are acid, moderately sloping, and moderately well drained to well drained. They commonly have a fine sandy loam surface layer and a subsoil of silty clay loam, clay loam, and clay. Erosion is slight to moderate.

Water moves into and through these soils at a slow to moderate rate. The clay layers slow the penetration of roots. Organic-matter content and natural fertility are low.

The soils in this unit are used mostly for trees or are idle, but a small acreage is still in row crops. Small grain, soybeans, and grain sorghum are fairly well suited. Well-suited pasture plants are bermudagrass, tall fescue, dallisgrass, sudangrass, wild winter peas, sericea lespedeza, and white clover. At a high level of management, yields of crops and pasture plants are fair. Crops respond to lime and fertilizer moderately well.

Management is needed that controls erosion and increases fertility. Cropping systems that slow runoff should be used. This soil can be used for clean-tilled crops if close-growing crops are grown most of the time. An

example of a suitable cropping system is 6 years of sod crops and 2 years of row crops. A cover crop is needed after each row crop is harvested.

CAPABILITY UNIT IVw-1

Frost silt loam is the only soil in this capability unit. This nearly level, poorly drained, acid soil occurs in small depressions in the uplands. It has a gray silt loam surface layer and a gray silty clay loam or clay loam subsoil. Erosion is slight.

Water moves into and through this soil at a slow rate. A seasonal high water table restricts the penetration of roots. In some periods this soil is too wet, and in others it is too dry. It can be worked easily when dry, but it crusts and packs when bare. Organic-matter content is low, and natural fertility is low to medium.

This soil is used mainly for hardwood trees, but small areas have been cleared and are in pasture. If drainage is adequate and management is at a high level, fair yields of shallow-rooted row crops and favorable yields of pasture plants can be produced. Corn, grain sorghum, and truck crops, such as sweetpotatoes and cucumbers, are well suited. Crops respond fairly well to lime and fertilizer. Suitable pasture plants are tall fescue, bahiagrass, white clover, and annual lespedeza. Hardwoods and loblolly pines grow well.

Management is needed that provides drainage, increases fertility, and adds organic matter. Drained areas are suitable for clean-tilled crops if close-growing crops are used most of the time. An example of a suitable cropping system is 4 years of sod crops followed by a crop of sweetpotatoes.

CAPABILITY UNIT IVw-2

Mashulaville silt loam is the only soil in this capability unit. This nearly level, poorly drained soil has a fragipan at a depth of 7 to 19 inches. The surface layer is a silt loam, and the subsoil is loam to silt loam that is underlain by loam to sandy loam. Erosion is slight.

Water moves into and through this soil at a slow rate. The penetration of roots is restricted by the fragipan and the seasonally high water table. Organic-matter content is low, and natural fertility is low to medium. This soil is easy to work when dry, but it crusts and packs when bare.

Most of this soil is in hardwood trees, but a small part is in pasture. If drainage is adequate and management is at a high level, fair yields of shallow-rooted row crops and favorable yields of pasture can be produced. Corn, grain sorghum, and truck crops, such as sweetpotatoes and cucumbers, are well suited. Crops respond fairly well to lime and fertilizer. Tall fescue, bahiagrass, white clover, and annual lespedeza are well-suited pasture plants. Hardwoods and loblolly pines grow well.

Management is needed that provides drainage, increases fertility, and adds organic matter. Drained areas are suitable for clean-tilled crops if close-growing crops are grown most of the time. An example of a suitable cropping system is 4 years of sod crops followed by 1 year of a row crop.

CAPABILITY UNIT IVw-3

Only Myatt loam is in this capability unit. This nearly level, poorly drained, acid soil is on stream terraces. It has a loam surface layer and a heavy loam and loam subsoil. Erosion is slight.

Water moves into and through this soil at a slow rate. A seasonally high water table restricts the penetration of roots. This soil easily can be worked when dry, but it crusts and packs if bare. A plowpan forms unless the depth of plowing is varied. Organic-matter content and natural fertility are low.

Trees are the main use, but some areas are in pasture. With adequate drainage and a high level of management, fair yields of a small number of row crops and pasture plants can be produced. Corn, rice, small grain, and soybeans are well suited. Crop response to lime and fertilizer is fair. Well-suited pasture plants are bermudagrass, tall fescue, dallisgrass, bahiagrass, wild winter peas, and white clover. Hardwoods and loblolly pines grow well.

Management is needed that provides drainage, adds organic matter, and increases fertility. Drained areas are suitable for clean-tilled crops if close-growing crops are grown most of the time. An example of a suitable cropping system is 4 years of sod crops and 1 year of a row crop.

CAPABILITY UNIT IVw-4

Wehadkee silt loam is the only soil in this capability unit. This nearly level, poorly drained, acid soil is on bottom lands. The friable silt loam surface layer is underlain by loam, sandy clay loam, and clay loam. Flooding is very severe.

Water moves into and through this soil at a slow rate. The high water table restricts the penetration of roots, but this soil is droughty at times. It can be worked easily when dry, but it crusts and packs when bare. A plowpan forms unless the depth of plowing is varied. Organic-matter content and natural fertility are low.

This soil is used mostly for hardwood trees, but a few areas are used for pasture. If drainage is adequate and management is at a high level, fair yields of crops planted early in summer can be produced. This soil is well suited to corn, soybeans, bermudagrass, tall fescue, bahiagrass, annual lespedeza, and white clover. Crops respond fairly well to lime and fertilizer. Hardwoods and loblolly pines grow well.

Management is needed that controls flooding, provides drainage, increases fertility, and adds organic matter (fig. 5). Drained areas are suitable for clean-tilled crops if close-growing crops are grown most of the time. An example of a suitable cropping system is 4 years of sod crops and 2 years of clean-tilled crops. A cover crop is needed after each row crop is harvested.

CAPABILITY UNIT Vw-1

This capability unit consists of nearly level, excessively drained soils. The entire profile of these soils is loamy sand or sand. Flooding is a severe hazard.

Water moves into and through these soils at a rapid rate, and they are droughty at times. Organic-matter content and natural fertility are low.

Most of the acreage is in hardwood trees, but a very small part is in native grasses. These soils are well suited to trees, especially hardwoods. Some small areas are suited to common bermudagrass, bahiagrass, and Coastal bermudagrass.

The main concerns in managing these soils are frequent flooding, deposits of sand, low fertility, and low organic matter. If flooding cannot be controlled, these soils should be kept in perennial vegetation or hardwood trees.

Figure 5.—**A dragline drainage ditch on Wehadkee silt loam.**

CAPABILITY UNIT VIe–1

Ruston fine sandy loam, 12 to 17 percent slopes, eroded, is the only soil in this capability unit. It is a well-drained, acid soil on the uplands. The surface layer is very friable fine sandy loam, and the subsoil is sandy clay loam, clay loam, and sandy loam. Erosion is slight to moderate.

Infiltration is moderate, and permeability is moderate to rapid throughout the subsoil. Organic-matter content and natural fertility are low. This soil can be worked easily, but it crusts and packs when bare.

This soil is mostly in trees and pasture (fig. 6). A small part is in row crops, though clean-tilled crops are well suited. If management is good, bermudagrass, bahiagrass, sudangrass, millet, wild winter peas, and crimson clover are well suited. These plants respond moderately well to lime and fertilizer. Orchard trees, hardwoods, and pines also grow well.

Management is needed that controls erosion, adds organic matter, and increases fertility. This soil should be kept in permanent vegetation. Yields of pasture are particularly good if lime and a complete fertilizer are added. Pasture should not be overgrazed.

CAPABILITY UNIT VIe–2

Shubuta and Boswell soils, 8 to 12 percent slopes, eroded, are the only soils in this capability unit. These soils are acid and moderately well drained to well drained. Their friable sandy loam surface layer is underlain by a silty clay loam, clay loam, and clay subsoil. Erosion is slight to moderate.

Water moves into and through these soils at a slow to moderate rate. Organic-matter content and natural fertility are low.

Most of the acreage is in trees, but a small part is in pasture. At a high level of management, fair yields of commonly grown pasture plants can be produced. Suitable pasture plants are annual lespedeza, bermudagrass, and white clover. Plant response to lime and fertilizer is moderately good. Pines and adapted hardwoods grow well.

CAPABILITY UNIT VIIe–1

Only Gullied land is in this capability unit. It is in moderately sloping to very steep areas that are very severely eroded and gullied. The texture of the surface layer varies widely. The underlying material ranges from sand to clay loam.

Runoff is rapid and further erosion is likely. The content of organic matter is low and is difficult to increase.

A well-managed permanent cover is needed on this land to protect it from further erosion. Pine trees provide this protection and grow especially well.

CAPABILITY UNIT VIIe–2

Only Ruston fine sandy loam, 8 to 17 percent slopes, severely eroded, is in this capability unit. This severely eroded soil is well drained and acid. Its friable fine sandy loam surface layer is underlain by sandy clay loam, clay loam, or sandy loam.

Infiltration is moderate, and permeability is moderate to rapid throughout the subsoil. Organic-matter content and natural fertility are low. This soil can be worked easily, but it crusts and packs when bare.

This soil has been mostly used for row crops and pasture, but it is now in trees and pasture. It is not suited to clean-tilled crops. At a high level of management, good pasture can be produced. Well-suited pasture plants are bermudagrass, bahiagrass, sudangrass, millet, wild winter peas, and crimson clover. Orchard trees, hardwoods, and pines grow well.

The main concerns in managing this soil are the rapid runoff and severe erosion, the low content of organic matter, and the low fertility. Management is needed that keeps this soil in permanent vegetation. The pasture should not be overgrazed.

CAPABILITY UNIT VIIe–3

This capability unit consists of steep, well-drained to somewhat excessively drained, acid soils. These soils have a surface layer of very friable fine sandy loam and loamy sand and a subsoil of sandy clay loam, clay loam, and sandy loam. Erosion is slight to moderate.

Water moves into and through these soils at a moderate to rapid rate. Organic-matter content and natural fertility are low.

The soils in this unit are used mostly for trees, but a small part is in pasture. Adapted hardwoods and pine trees are well suited, but slopes are too steep for hay crops and pasture.

The main concerns in managing these soils are erosion, low fertility, and the low content of organic matter. A well-managed permanent cover is needed.

CAPABILITY UNIT VIIe–4

Shubuta and Boswell soils, 12 to 17 percent slopes, are the only soils in this capability unit. These moderately

Figure 6.—**Pasture of bahiagrass on Ruston fine sandy loam, 12 to 17 percent slopes, eroded.**

well drained and well drained, acid soils have a surface layer or friable sandy loam and a subsoil of silty clay loam, clay loam, and clay. Erosion is slight.

Water moves into and through these soils at a slow to moderate rate. Organic-matter content is low, and natural fertility is low to medium.

The soils in this unit are in mixed stands of pines and hardwoods, for which they are well suited.

CAPABILITY UNIT VIIs-1

This capability unit consists of acid, steep to very steep, well-drained to excessively drained soils. The surface layer of these soils is gravelly fine sandy loam, and the subsoil is gravelly sandy loam to gravel. Erosion is slight.

Infiltration is moderate to rapid. Permeability is moderate to rapid above the gravel. Organic-matter content and natural fertility are low.

These soils are mostly in pines and mixed hardwoods, but a small part is in pasture. Crops or pasture are not suited because of the steep and very steep slopes and the gravel. Hardwoods and pines are well suited.

Estimated yields [1]

In table 1 are estimated yields of the principal crops on most of the soils in Walthall County under a high level of management. Bruno loamy sand, Guin gravelly fine sandy loams, Gullied land, Ruston-Lucy complex, and Sandy alluvial land are not generally used for crops and pasture and are not listed in table 1.

The estimates are based on yields obtained in long-term experiments; on observations made during the survey; and on information from agricultural workers who are familiar with the soils in the county. Data for yields obtained on experimental plots were adjusted to reflect the combined effect of slope, weather, and levels of management. If such data were not available, estimates were made by using data available for similar soils.

The estimates are for unirrigated areas that receive average rainfall for a long period. Because the effects of flooding must be considered locally, it was assumed that flooding is not a hazard.

[1] H. S. Saucier, conservationist agronomist, Soil Conservation Service, assisted in the preparation of this subsection.

TABLE 1.—*Estimated average acre yields of the principal crops under a high level of management*

[Absence of yield indicates crop is not commonly grown on the particular soil]

Soil [1]	Cotton (lint)	Corn	Oats	Hay	Permanent pasture	
					Bermuda-grass-legume	Bahia-grass-legume
	Lb.	*Bu.*	*Bu.*	*Tons*	*Cow-acre-days* [2]	*Cow-acre-days* [2]
Brookhaven silt loam, 0 to 2 percent slopes	600	75	55	3.0	261	275
Brookhaven silt loam, 2 to 5 percent slopes	625	75	55	3.0	261	275
Brookhaven silt loam, 2 to 5 percent slopes, eroded	600	60	50	3.0	261	275
Bude silt loam, 0 to 2 percent slopes	500	55	50	3.3	250	260
Cahaba fine sandy loam, 0 to 2 percent slopes	700	90	80	5.5	225	300
Cahaba fine sandy loam, 2 to 5 percent slopes	700	80	80	5.5	225	300
Cascilla silt loam	800	100	90	5.8	330	360
Collins silt loam	725	95	65	4.3	324	354
Falaya silt loam	650	85	55	4.0	318	345
Frost silt loam				2.5	231	258
Mantachie soils	650	85	55	5.0	225	300
Mashulaville silt loam				3.5	137	197
Myatt loam				3.5	137	197
Ochlockonee-Iuka soils	725	95	65	5.0	225	300
Ora loam, 2 to 5 percent slopes	650	75	55	4.75	220	270
Ora loam, 2 to 5 percent slopes, eroded	600	70	55	4.75	220	270
Ora loam, 2 to 5 percent slopes, severely eroded	500	40	35	3.0	180	200
Ora loam, 5 to 8 percent slopes, eroded	600	70	50	3.0	200	270
Ora loam, 5 to 8 percent slopes, severely eroded	300	40	35	2.0	180	200
Ora loam, 8 to 12 percent slopes, eroded	300	40	35	3.0	200	270
Pheba silt loam, 0 to 5 percent slopes	500	50	50	1.5	235	260
Prentiss fine sandy loam, 0 to 2 percent slopes	550	80	50	4.0	200	240
Prentiss fine sandy loam, 2 to 5 percent slopes	550	80	50	4.0	200	240
Providence silt loam, 2 to 5 percent slopes, eroded	650	70	60	4.0	297	306
Providence silt loam, 5 to 8 percent slopes, eroded	600	65	50	4.0	297	306
Rumford fine sandy loam, 0 to 2 percent slopes	500	55	40	5.0	225	300
Ruston fine sandy loam, 0 to 2 percent slopes	700	100	80	5.5	245	300
Ruston fine sandy loam, 2 to 5 percent slopes	700	90	80	5.5	245	300
Ruston fine sandy loam, 2 to 5 percent slopes, eroded	650	75	60	4.0	243	276
Ruston fine sandy loam, 5 to 8 percent slopes, eroded	650	60	55	4.0	200	270
Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded	400	40	40	3.0	170	200
Ruston fine sandy loam, 8 to 12 percent slopes, eroded	400	50	40	4.0	243	276
Ruston fine sandy loam, 12 to 17 percent slopes, eroded					235	265
Ruston fine sandy loam, 8 to 17 percent slopes, severely eroded					160	200
Ruston fine sandy loam, 17 to 40 percent slopes						
Ruston fine sandy loam, 17 to 40 percent slopes, eroded						
Saffell gravelly fine sandy loam, 2 to 8 percent slopes, eroded	500	60	50	2.0	200	256
Saffell gravelly fine sandy loam, 8 to 12 percent slopes, eroded				1.5	170	177
Savannah silt loam, 0 to 2 percent slopes	600	75	55	4.0	200	240
Savannah silt loam, 2 to 5 percent slopes, eroded	600	60	50	4.0	210	245
Savannah silt loam, 5 to 8 percent slopes, eroded	600	60	50	4.0	210	245
Shubuta and Boswell soils, 5 to 8 percent slopes, eroded					195	200
Shubuta and Boswell soils, 8 to 12 percent slopes, eroded					190	195
Shubuta and Boswell soils, 12 to 17 percent slopes					185	190
Stough fine sandy loam, 0 to 3 percent slopes	500	75	50	4.0	200	240
Wehadkee silt loam				4.3	200	264

[1] Only soils generally used for crops or pasture are included in this table.

[2] Cow-acre-days is a term used to express the carrying capacity of pasture. It is the number of animal units carried per acre multiplied by the number of days the pasture is grazed during a year without injury to the sod. An acre of pasture that provides 30 days of grazing for two cows has a carrying capacity of 60 cow-acre-days.

To obtain the yields listed in table 1, the following management practices are needed: (1) Applying lime and fertilizer in amounts indicated by soil tests and field trials; (2) using crop varieties that are suited to the area; (3) preparing the seedbed adequately; (4) planting or seeding the crop by suitable methods, at suitable rates, and at the right time; (5) inoculating legumes; (6) practicing shallow cultivation of row crops; (7) controlling weeds, insects, and diseases; (8) using cropping systems such as those suggested in the subsection "Management by Capability Units"; (9) where needed, establishing grassed waterways, tilling on the contour, constructing terraces, and draining the soils; and (10) protecting the soils from overgrazing.

The following paragraphs give the rates of seeding and fertilization and some special practices that are required if yields listed in table 1 are to be obtained.

COTTON.—Soils for which yields of cotton are estimated in table 1 require, at or before planting, 60 to 90 pounds of nitrogen (N), 80 to 120 pounds of phosphate (P_2O_5), and 60 to 90 pounds of potash (K_2O) per acre, as well as a side dressing of 33 pounds of nitrogen.

CORN.—Soils for which yields of corn are estimated require, at or before seeding, 90 to 120 pounds of nitrogen, 49 to 90 pounds of phosphate, and 48 to 90 pounds of potash per acre. An additional 16 to 30 pounds of nitrogen is needed when the corn is knee high. The crop is seeded at the rate of 10,000 to 12,000 plants per acre.

OATS.—Soils for which yields of oats are estimated are seeded in September on a seedbed that has been left fallow. The fertilizer required per acre is 60 pounds of nitrogen, 100 pounds of phosphate, and 60 pounds of potash, at or before seeding, and a topdressing of 33 pounds of nitrogen in December or January. Lime is applied to maintain a pH of 6.0. The oats are grazed, but grazing is controlled. The cattle are removed from the field from March 1 to March 15, and an additional 33 pounds of nitrogen per acre is added as a topdressing.

Oats generally can be grazed until about March 1. They are then grown for grain, or they are cut for hay. A short method of finding the approximate yield in tons of hay is dividing the number of bushels of oats by 31.

HAY CROPS AND PERMANENT PASTURE.—Hay crops and permanent pasture are discussed together because the general practice in the county is to cut hay from the surplus grass in a permanent pasture and to cut millet for silage after temporary grazing. Therefore, the level of management applies equally well to both crops.

Soils for which estimated yields of forage are listed in table 1 require, for grasses, an annual application of 60 to 90 pounds each of nitrogen, phosphate, and potash per acre. Soils used for legumes require enough lime to bring the pH to 6.5. Phosphate and potash are applied according to the results of the soil tests. If mowing is needed, the areas are clipped two or three times annually and are sprayed to control weeds. The pastures are fenced so that grazing can be regulated. The pastures and hayfields are renovated and reseeded when necessary.

Use of Soils for Woodland Grazing [2]

The woodland of Walthall County is used primarily for the production of timber, but it also supplies much forage for cattle. Of the 133,600 acres of woodland in the county (*7*)[3], about 80 percent is grazed seasonally or all year by about 26,800 cattle, or about 80 percent of the cattle in the county. About 64,000 acres in woodland is in pine, and most of the rest is in mixed hardwoods. If grazing is properly managed, the woodland in pine can be grazed without appreciable damage to the timber. In areas of pine, grazing has an additional advantage of reducing the hazard of fire and controlling unwanted hardwoods, brush, and vines. But in areas of hardwoods, the selective browsing of cattle is likely to damage the better species of trees.

Woodland combined with improved pasture furnishes good forage the year around. Improved pasture is used during summer to fatten calves and cows for market. In winter, the woodland provides cheap forage that carries the cattle through the winter if it is supplemented with feed high in protein. Most of the cattle that graze in woodland are beef cattle, for they can utilize the native forage in woods better than can dairy cattle.

The production of woodland forage depends on the kinds of plants, on the amount of shade, or the density of the timber canopy, and on the distribution of rainfall. Grazable woodland is in *excellent* condition if it has a high percentage of tall perennial grasses. It is in *good* condition if the tall and short perennial grasses are in about equal amounts. The woodland is in *fair* condition if the ground cover is mostly perennial grasses, annual grasses, and weeds. If the ground cover is mostly annual grasses, broomsedge, bluestem, and weeds, the woodland is in *poor* condition for grazing.

The timber canopy is classified according to the amount of shade it gives. The canopy is dense if it shades 76 to 100 percent of the ground; medium, 51 to 75 percent; sparse, 26 to 50 percent; and open, 26 percent. As density increases from open to sparse, the forage is reduced by about 20 percent. Only 55 percent as much forage is produced under a medium canopy as under an open one. Little, if any, forage is produced where the canopy is dense.

The production of woodland forage follows a definite cycle that is related to the growth of the trees. After mature trees are cut, grasses grow rapidly. Then the young trees grow taller and shade more of the ground. The low, shallow-rooted grasses are first eliminated by the increasing shade. As the canopy becomes dense, the broad-leaved, deep-rooted perennials are eliminated.

Little forage is produced under undisturbed trees 15 to 25 years of age, but the forage increases rapidly as the stand is thinned to provide growing room for the remaining trees. As the trees grow taller, however, and the canopy becomes denser, the forage gradually decreases until the stand is again thinned. Then the cycle is repeated. Fully stocked stands that are 25 to 60 years old generally cast shade that covers 35 to 60 percent of the ground. The most forage grows in stands of longleaf pine, less in stands of slash pine, and the least in stands of loblolly pine and shortleaf pine.

Woodland forage sites

The soils in Walthall County have been grouped in five woodland forage sites so that the managers of woodland can make the best use of forage for the grazing of livestock. A woodland forage site is made up of soils that differ from the soils in other sites, that produce significantly different kinds and amounts of vegetation, and that require different management to maintain or improve the site.

The five woodland forage sites in this county are described in the following pages. To find the names of the soils in these sites, refer to the "Guide to Mapping Units" at the back of this survey.

In describing the woodland forage sites, the terms *decreasers*, *increasers*, and *invaders* are used. Decreasers are choice plants that are weakened and gradually eliminated, as livestock seek out the more palatable and nutritious plants. These plants are replaced by less palatable ones, or increasers. If heavy grazing continues, even the increasers are weakened and the site is eventually occupied by less desirable grasses and weeds, or invaders.

[2] DAVID W. SANDERS, woodland-range conservationist, helped prepare this subsection.

[3] Italicized numbers in parentheses refer to Literature Cited, p. 76.

WOODLAND FORAGE SITE 1

This forage site is on nearly level to gently undulating hills on the lower Coastal Plain. It consists of moderately well drained and well drained, nearly level to gently undulating soils that have a surface layer of fine sandy loam, loam, and silt loam. These soils were derived from unconsolidated sand, silt, gravel, and clay of the Coastal Plain. Infiltration is moderate, and the internal movement of water is moderate to high. Runoff is slow to moderate, and the hazard of erosion is slight to severe. These soils are low in natural fertility and in content of organic matter. They are strongly acid or very strongly acid.

The overstory on this site consists mainly of longleaf and loblolly pines, but there is some shortleaf pine. The hardwoods on this site include southern red oak, Shumard oak, turkey oak, blackjack oak, water oak, post oak, sweetgum, blackgum, black cherry, persimmon, and hickory. In many places these hardwoods form such a dense understory that growth of grass is restricted. The shrubs in the understory are chiefly gallberry, French mulberry, yaupon, huckleberry, and dogwood. Vines are also present.

When it is in its best condition, the ground cover is 80 percent decreasers, 17 percent increasers, and 3 percent invaders. Pinehill bluestem is the dominant decreaser, and switchgrass, indiangrass, longleaf uniola, and perennial tickclover are also common. The most common increasers are low panicum, perennial three-awn, and grassleaf goldaster; less common are beaked panicum, dropseed, and carpetgrass. An increase of carpetgrass indicates that the site has been severely overused. Broomsedge and honeysuckle are the most common invaders, but bluestem, annual grasses, and annual and perennial weeds also invade.

When this site is in excellent condition, annual production is about 3,000 pounds of air-dry forage per acre in areas without an overstory.

WOODLAND FORAGE SITE 2

This forage site consists of strongly sloping to very steep soils on the lower Coastal Plain. These soils have a surface layer of fine sandy loam, loam, sandy loam, or loamy sand. They developed from unconsolidated sand, gravel, silt, and clay. In most places drainage is good. Infiltration is moderate, and the internal movement of water is moderate to slow. Available water capacity is moderate. Runoff is rapid to moderate, and erosion is slight to severe. These soils are somewhat droughty, and plants must rely largely on summer showers for their moisture. These soils are strongly acid and have low natural fertility and content of organic matter.

Dominant in the overstory on this site are longleaf and loblolly pines, and there is some shortleaf pine. The hardwoods generally are southern red oak, Shumard oak, turkey oak, blackjack oak, water oak, post oak, sweetgum, blackgum, black cherry, persimmon, and hickory. In many places, these hardwoods are so dense that growth of grass is restricted. Except along the drain heads and on the moist lower slopes, these hardwoods are scrubby and of low quality. The shrubs in the understory are gallberry, French mulberry, yaupon, huckleberry, and dogwood. Vines also grow on this soil.

When it is in its best condition, ground cover is 80 percent decreasers, 17 percent increasers, and 3 percent invaders. The principal decreasers are pinehill bluestem, switchgrass, indiangrass, longleaf uniola, and perennial tickclover. Pinehill bluestem is dominant. Low panicum, perennial three-awn, and grassleaf goldaster are the most common increasers, and dropseed and carpetgrass are also present. An increase of carpetgrass indicates that the site has been severely overused. Broomsedge, bluestem, and honeysuckle are the most common invaders; annual grasses and annual and perennial weeds also invade.

When this site is in excellent condition, annual production is about 2,400 pounds of air-dry forage per acre in areas without an overstory.

WOODLAND FORAGE SITE 3

This forage site consists of soils in alluvium on the bottom lands and in depressions of the lower Coastal Plain. These soils are nearly level and moderately well drained to poorly drained. They formed in material that washed from the uplands. The surface layer is silt loam, loamy sand, loam, and fine sandy loam. Natural fertility is low, the content of organic matter is low to moderate, and acidity is strong. Available moisture capacity is moderate to high. Runoff is slow, and most areas are flooded several times a year.

This forage site supports mixed stands of hardwoods. The trees include ash, beech, cypress, hackberry, elm, magnolia, red maple, and many kinds of oaks. The oaks are cherrybark, laurel, Nuttall, Shumard, southern red, swamp, chestnut, water, white, and willow. Also present are persimmon, sweetgum, sweetbay, sycamore, black tupelo, yellow-poplar, and a few loblolly and spruce pines. Fields planted to pines generally revert to hardwoods after a planting has been harvested.

The understory consists of blue beech, ironwood, gallberry, huckleberry, yaupon, mountain-laurel, and vines. Rushes, sedges, and grasses make up the ground cover. Because browsing cattle seriously damage hardwoods, these animals should be confined to stands of pines or to stands of young hardwoods that are not managed for reproduction.

WOODLAND FORAGE SITE 4

This site consists of soils in level to gently undulating areas covered with a 2- to 4-foot layer of loess that is underlain by sand and clay of the Coastal Plain. Water enters these soils at a moderate rate and moves in them at a moderate to slow rate. Available moisture is moderate. Runoff is slow to moderate. Except in a few severely eroded areas, erosion is slight to moderate. These soils are strongly acid and have low to moderate natural fertility. They contain a small amount of organic matter.

In the overstory, loblolly pine is the dominant tree, and shortleaf and longleaf pines are also present. The oaks that grow in places are blackjack, post, black, Shumard, southern red, cherrybark, white, laurel, and willow. Other trees that may be present are elm, hackberry, sweetgum, blackgum, red maple, boxelder, yellow-poplar, black locust, beech, and sycamore. The stands range from pure pine to nearly pure hardwoods. In the understory are redbay, huckleberry, French mulberry, redcedar, sourwood, dogwood, crabapple, and vines.

When this site is in its best condition, ground cover is about 75 percent decreasers, 20 percent increasers, and 5 percent invaders. The principal decreasers are pinehill bluestem, switchgrass, indiangrass, and switchcane. Long-

leaf uniola and pinehill bluestem are dominant. The most common increasers are low panicum, beaked panicum, and grassleaf goldaster. Other increasers are perennial three-awn, dropseed, and carpetgrass. Invading plants are broomsedge, bluestem, some annual grasses, perennial weeds, and vines.

When this site is in excellent condition, annual production is about 3,000 pounds of air-dry forage per acre in areas without an overstory.

WOODLAND FORAGE SITE 5

This site consists of soils that formed on nearly level bottom lands in material that washed from loessal uplands. These poorly drained to well-drained soils have a silt loam surface layer. They are strongly acid. Natural fertility is moderate, and the content of organic matter is low to moderate. Available water capacity is moderate to high. Runoff is slow, and most areas are flooded several times a year.

The overstory consists mostly of hardwoods, but pines grow in a few stands. Grazing should be confined to these stands of pines and to young stands of hardwoods that are not managed for reproduction. The canopy of the overstory is generally so dense that grass grows only in small amounts. Most of the forage is browse.

The trees in the overstory include ash, cypress, willow, beech, yellow-poplar, and sycamore. The oaks are water, pin, white, swamp, chestnut, cherry, southern red, Shumard, and willow. Other trees in the overstory are hickory, honeylocust, magnolia, elm, red maple, boxelder, blackgum, sweetgum, loblolly pine, and spruce pine. Plants in the understory include buttonbush, black alder, sourwood, gallberry, huckleberry, dogwood, witch-hazel, redbay, wild azalea, hawthorn, and vines.

When this site is in its best condition, ground cover is about 85 percent decreasers, 10 percent increasers, and 5 percent invaders. The dominant increasers are pinehill bluestem and longleaf uniola, and they are mixed with switchcane and plumegrass. The most common increasers are low panicum, sedges, and rushes, but beaked panicum, carpetgrass, and perennial three-awn are also common. Invaders include broomsedge, bluestem, annual grasses, perennial weeds, and vines.

When this site is in excellent condition, annual production is about 4,000 pounds of air-dried forage per acre in areas without an overstory.

Use of Soils as Woodland [4]

Most of Walthall County was covered by a heavy growth of virgin forest. Pines and hardwoods grew on the bottom lands. Longleaf pine generally grew on the ridges and in areas that were fairly dry. Loblolly and shortleaf pines grew on the middle and lower parts of slopes. Loblolly pine was also in pure stands on stream terraces and on moist sites along streams. Along McGee Creek, the Bogue Chitto River, and their larger tributaries were beech, sweetgum, water oak, yellow-poplar, magnolia, elm, ash, cypress, white oak, maple, and other valuable hardwoods.

Some trees were cut in about 1858, but large-scale cutting did not begin until the early 1900's. By 1917, practically all of the merchantable timber had been removed, and only scattered stands of second-growth pine were left. In recent years, however, stands of second-growth pine have been producing good yields (fig. 7). The trees are suitable for fenceposts, for sawtimber, and for logs that are used for veneer of high quality.

Forest types

Forest type is a term used to designate groups or stands of trees that, because of their ecology, are similar in composition and development but differ from other groups or stands. The term suggests repetition of the same composition and character under similar conditions.

The following lists the five major forest types in Walthall County and the number of acres occupied by each type.

Forest type	*Acres*
Loblolly-shortleaf pine	47,300
Longleaf-slash pine	16,700
Oak-pine	25,100
Oak-hickory	25,000
Oak-gum-cypress and elm-ash-cottonwood	19,500
Total	133,600

The loblolly-shortleaf pine, longleaf-slash pine, and oak-pine forest types consist mostly of softwoods. Hardwoods make up the oak-hickory, oak-gum-cypress, and elm-oak-cottonwood forest types.

In the following paragraphs, each of the major forest types in Walthall County is described, and the soil associations in which they occur are named.

Loblolly-shortleaf pine.—This type consists of forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines except longleaf or slash pine. The trees grow singly and in combination. Common associates include oak, hickory, and gum.

This forest type occurs principally on soils in the Ora-Ruston, Ruston-Ora, Ora-Savannah-Ruston, and Ora-Guin-Ruston soil associations. It is dominant in the northern half of the county, but in other places it is intermingled with the longleaf-slash pine and oak-pine forest types.

Longleaf-slash pine.—This type consists of forests in which 50 percent or more of the stand is longleaf pine or slash pine (fig. 8). The trees grow singly or in combination. Common associates include other southern pines and oak and gum.

This type is mainly in the southern half of the county, but pure, even-aged stands of longleaf pine are in the northwestern quarter. Only one pure native stand of slash pine remains in the county, but there are many successful plantations of slash pine. The longleaf-slash pine type is in many places on soils in the Ora-Ruston, Ora-Savannah-Ruston, Ruston-Ora, Brookhaven-Providence-Ora, and Ruston-Lucy soil associations.

Oak-pine.—This type consists of forests in which 50 percent or more of the stand is hardwoods, generally upland oaks, and 25 to 49 percent is southern pines. Common associates include gum, hickory, and yellow-poplar.

This forest type occurs chiefly on soils in the Ora-Ruston, Ruston-Ora, Ora-Guin-Ruston, Ruston-Lucy, and Brookhaven-Providence-Ora soil associations. It is widely distributed in Walthall County, but it is most extensive in the southeastern and northwestern quarters of the county. It intermingles with the longleaf-slash pine type in the southeastern quarter and with the loblolly-shortleaf pine type in the northwestern quarter.

[4] JOSEPH V. ZARY, woodland conservationist, Soil Conservation Service, assisted in the preparation of this subsection.

***Figure 7.*—Stand of slash pine is on left side of road, and a mixed stand of loblolly pine and longleaf pine is on the right side of road. The soil is Ruston fine sandy loam, 2 to 5 percent slopes, eroded.**

Oak-hickory.—This type consists of forests in which 50 percent or more of the stand is upland oaks or hickory. The trees grow singly or in combination. Other trees commonly present are yellow-poplar, elm, maple, and black walnut.

This forest type occurs mainly on soils in the Ruston-Lucy, Ora-Ruston, and Ruston-Ora soil associations. It is extensive in the southeastern and south-central parts of the county, and it also occurs throughout the county on middle to lower slopes and around heads of drains. On many of the middle slopes, this type intermingles with the oak-pine type.

Oak-gum-cypress.—This forest type is on bottom lands. At least 50 percent of the stand is tupelo, blackgum, sweetgum, oak, or southern cypress. These trees grow singly or in combination. Common associates include cottonwood, willow, ash, elm, hackberry, and maple.

This forest type is on soils in the Wehadkee-Mantachie, Prentiss-Stough-Cahaba, and Mantachie-Ochlockonee-Wehadkee soil associations. It is along the Bogue Chitto River, McGee Creek, and minor streams in the southeastern part of the county.

Elm-ash-cottonwood.—This type consists of forests in which 50 percent or more of the stand is elm, ash, or cottonwood. These trees grow singly or in combination. Common associates include willow, sycamore, beech, and maple.

This forest type is on soils in the Cascilla-Collins-Falaya, Prentiss-Stough-Cahaba, and Mantachie-Ochlockonee-Wehadkee soil associations. It is mainly on the first and second bottoms of McGee Creek and its major tributaries.

Woodland suitability groups

To assist owners of woodland and others in planning the management of woodland, the soils of this county have been placed in woodland suitability groups. Each group is made up of soils that have about the same suitability for wood crops, that require about the same management, and that have about the same potential productivity. Shown in table 2 are each of these groups and the map symbols of the soils in each group.

Potential productivity is given in table 2 as site index. A site index is the average height of dominant and codominant trees 50 years of age. In table 2 site index is listed for loblolly pine, shortleaf pine, longleaf pine, and adapted hardwoods. The values for the pines were estimated on the basis of studies made in Lawrence, Pike, Marion, and Walthall Counties.

As shown in table 2, each woodland suitability group has, in varying degree, limitations that affect its management. These limitations are expressed in the relative terms of *slight*, *moderate*, or *severe*. These terms express the degree of limitations as explained in the following paragraphs.

Plant competition refers to the invasion or growth of undesirable species when openings are made in the canopy.

Figure 8.—**Longleaf-slash pine forest type in an area of Ora loam, 5 to 8 percent slopes, eroded. The trees in the foreground are slash pine 2 years old; those in the background are longleaf pine.**

Competition is *slight* if unwanted plants, or invaders, are not a problem. It is *moderate* if the invaders delay but do not prevent the establishment of a normal, fully stocked stand. Where competition is moderate, seedbed preparation generally is not needed, and simple methods can be used to prevent undesirable plants from invading. Competition is *severe* if trees cannot regenerate naturally. Where competition is severe, careful preparation of the site is needed. Also needed is management that includes burning, girdling, and spraying the unwanted plants with chemicals.

Seedling mortality refers to the failure of seedlings to grow in a normal environment after adequate natural seeding has taken place or after suitable seedlings have been planted. Mortality is *slight* if no more than 25 percent of the planted seedlings die, or if trees ordinarily regenerate naturally in places where there are enough seeds. It is *moderate* if 25 to 50 percent of the planted seedlings die or if the trees do not regenerate naturally in numbers needed for adequate restocking. In some places replanting to fill open spaces will be necessary. Mortality is *severe* if more than 50 percent of the planted seedlings die or if trees do not ordinarily reseed naturally in places where there are enough seeds. If mortality is severe, seedlings should be planted where the seeds do not grow, a special seedbed should be prepared, and good methods of planting should be used to insure a full stand of trees.

Equipment limitation was rated on the basis of the characteristics of the soils that restrict or prohibit the use of equipment commonly used in pruning, thinning, and harvesting trees. Limitation is *slight* if there are no restrictions on the type of equipment or on the time of the year the equipment is used. It is *moderate* if slopes are moderately steep or if heavy equipment is restricted by wetness in winter and early in spring. Limitation is *severe* if the soils are moderately steep to steep, are rocky or stony, or are wet in winter or early in spring.

TABLE 2.—*Woodland suitability groups of soils*

Woodland group and symbols for mapping units	Potential productivity		Suitable trees	Plant competition	Seedling mortality	Equipment limitations	Erosion hazard
	Tree	Site index [1]					
Group 1: Deep, well-drained soils that have a sandy loam surface layer and a sandy clay loam to sandy loam subsoil; moderate to rapid permeability; slopes of 0 to 12 percent (CaA, CaB, RfA, RuA, RuB, RuB2, RuC2, RuC3, RuD2, SaC2, SaD2).	Longleaf pine Loblolly pine Shortleaf pine Sweetgum Red oak	75 88 77 70 60	*For planting:* Loblolly, slash, shortleaf, and longleaf pines. *To favor in stands:* Pure pine or mixed oaks and pine. *Other trees:* Black cherry, cherrybark oak, red oak, sweetgum, and yellow-poplar, all on lower slopes.	Moderate	Slight	Slight	Slight.
Group 2: Deep, well-drained, severely eroded soil that has a fine sandy loam surface layer and a sandy clay loam and sandy loam subsoil; moderate to rapid permeability; slopes of 8 to 17 percent (RuD3).	Loblolly pine Longleaf pine Shortleaf pine	74 65 65	*For planting:* Loblolly and shortleaf pines. *To favor in stand:* Pure pine.	Slight	Moderate	Severe	Severe.
Group 3: Deep, well-drained soils that have a fine sandy loam surface layer and a sandy clay loam to sandy loam subsoil; moderate to rapid permeability; slopes of 12 to 40 percent (RuE2, RuF, RuF2).	Longleaf pine Loblolly pine Shortleaf pine Sweetgum Red oak	75 88 77 70 60	*For planting:* Loblolly, slash, longleaf, and shortleaf pines. *To favor in stands:* Pure pine or mixed oaks and pine. *Other trees:* Black cherry, cherrybark oak, red oak, sweetgum, and yellow-poplar, all on lower slopes.	Moderate	Slight	Severe	Severe.
Group 4: Deep, well-drained and excessively drained soils that have a sandy loam and loamy sand surface layer and a sandy clay loam to sandy loam subsoil; moderate to rapid permeability; slopes of 17 to 40 percent (RlF).	Longleaf pine Loblolly pine Shortleaf pine Sweetgum Red oak	75 88 77 70 60	*For planting:* Loblolly, longleaf, and shortleaf pines. *To favor in stands:* Pure pine or mixed oaks and pine. *Other trees:* Black cherry, cherrybark oak, red oak, sweetgum, and yellow-poplar, all on lower slopes.	Moderate	Slight	Severe	Severe.
Group 5: Moderately well drained soils that have a silt loam surface layer and a silty clay loam subsoil; fragipan at a depth of 16 to 24 inches; moderate permeability; slopes of 0 to 8 percent (BhA, BhB, BhB2, PvB2, PvC2).	Loblolly pine Shortleaf pine Longleaf pine Cherrybark oak Water oak Sweetgum	85 64 74 90–99 75–84 85–94	*For planting:* Loblolly, longleaf, slash, and shortleaf pines. *To favor in stands:* Pure pine or mixed oaks and pine. *Other trees:* Red oak, sweetgum, black tupelo, cherrybark oak, and water oak.	Moderate	Slight	Slight	Slight.
Group 6: Moderately well drained soils that have a loam, silt loam, or fine sandy loam surface layer and a sandy clay loam or clay loam subsoil; fragipan at a depth of 19 to 24 inches; moderate permeability; slopes of 0 to 12 percent (OrB, OrB2, OrB3, OrC2, OrC3, OrD2, PrA, PrB, ShA, ShB2, ShC2).	Loblolly pine Shortleaf pine Longleaf pine Cherrybark oak Sweetgum Red oak	85 75 75 --- --- ---	*For planting:* Loblolly, longleaf, slash, and shortleaf pines. *To favor in stands:* Pure pine or mixed adapted hardwoods and pine. *Other trees:* Cherrybark oak, red oak, sweetgum, and black tupelo, all on lower slopes and terraces and around lower drain heads.	Moderate	Slight	Slight	Slight.

See footnote at end of table.

TABLE 2.—*Woodland suitability groups of soils*—Continued

Woodland group and symbols for mapping units	Potential productivity		Suitable trees	Plant competition	Seedling mortality	Equipment limitations	Erosion hazard
	Tree	Site index [1]					
Group 7: Moderately well drained to well drained soils in alluvium on flood plains; slopes of 0 to 2 percent (Cc, Co).	Loblolly pine Cottonwood Cherrybark oak Willow oak Sweetgum White oak	105 110–119 105–114 100–109 105–114 100–109	*For planting:* Loblolly pine, cottonwood, cherrybark oak, and sweetgum. *To favor in stands:* Adapted hardwoods or mixed adapted hardwoods and loblolly pine. *Other trees:* Basswood, black cherry, cottonwood, elm, magnolia, cherrybark oak, Shumard oak, red oak, water oak, white oak, sycamore, black tupelo, white tupelo, yellow-poplar, and sweetgum.	Moderate	Slight	Slight	Slight.
Group 8: Somewhat poorly drained soil in alluvium of silt loam texture; on flood plains; slopes of 0 to 2 percent (Fa).	Loblolly pine Cottonwood Cherrybark oak Willow oak Sweetgum	97 105–114 95–104 90 99 100 109	*For planting:* Loblolly pine, cherrybark oak, cottonwood, and sweetgum. *To favor in stands:* Adapted hardwoods or mixed hardwoods and pine. *Other trees:* Ash, red maple, Shumard oak, red oak, willow oak, sycamore, and yellow-poplar.	Moderate to severe.	Slight	Moderate	Slight.
Group 9: Poorly drained soil that has a silt loam surface layer and a loam to sandy clay loam subsoil; frequently flooded; slopes of 0 to 2 percent (Wk).	Loblolly pine Sweetgum Yellow-poplar	92 --- ---	*For planting:* Adapted hardwoods and loblolly pine. *To favor in stand:* Adapted hardwoods. *Other trees:* Ash, bald cypress, beech, red maple, cherrybark oak, laurel oak, Nuttall oak, swamp oak, water oak, sweetgum, and yellow-poplar.	Severe	Moderate	Severe	Slight.
Group 10: Poorly drained soils that have a silt loam or loam surface layer and a loam to silty clay loam subsoil; slopes of 0 to 2 percent (Fr, Mt).	Loblolly pine Cherrybark oak Sweetgum Water oak	94 --- 80–89 80–90	*For planting:* Adapted hardwoods and loblolly pine. *To favor in stand:* Adapted hardwoods. *Other trees:* Beech, water oak, cherrybark oak, sweetgum, and black tupelo.	Severe	Moderate	Severe	Slight.
Group 11: Poorly drained soil that has a silt loam surface layer underlain by a subsoil of silt loam, loam, and sandy loam that has a fragipan; slopes of 0 to 2 percent (Ms).	Loblolly pine Cherrybark oak Sweetgum Willow oak	95 --- 95–105 95–105	*For planting:* Adapted hardwoods and loblolly pine. *To favor in stand:* Adapted hardwoods. *Other trees:* White oak, water oak, willow oak, and sweetgum.	Severe	Moderate	Severe	Slight.
Group 12: Somewhat poorly drained soils that have a loam to silt loam surface layer and a sandy loam to loam subsoil; frequently flooded; slopes of less than 2 percent (Ma).	Loblolly pine Cottonwood Sweetgum Water oak Willow oak	105 100–109 100–109 95 104 95–104	*For planting:* Adapted hardwoods and loblolly pine. *To favor in stand:* Adapted hardwoods. *Other trees:* Magnolia, red maple, cherrybark oak, laurel oak, water oak, white oak, willow oak, sweetgum, water tupelo, and black tupelo.	Severe	Moderate	Severe	Slight.

Group 13: Well drained and moderately well drained soils that have a silt loam, loam, or fine sandy loam surface layer that is underlain by sandy loam, loam, silt loam, and light sandy clay loam, subject to flooding; slopes of 0 to 2 percent (Oc).	Loblolly pine Cherrybark oak Sweetgum Water oak Willow oak	102 --- 90–99 85–94 90–99	*For planting:* Loblolly pine and adapted hardwoods. *To favor in stands:* Adapted hardwoods and loblolly pine. *Other trees:* Black cherry, magnolia, cherrybark oak, water oak, white oak, sweetgum, black tupelo, yellow-poplar, and southern red oak.	Severe	Slight	Moderate	Slight.
Group 14: Somewhat poorly drained soil that has a silt loam surface layer; fragipan at a depth of 15 to 19 inches; slopes of 0 to 2 percent (BuA).	Loblolly pine Longleaf pine Shortleaf pine Cherrybark oak Water oak Sweetgum	84 72 71 85–95 80–89 85–95	*For planting:* Loblolly pine and adapted hardwoods. *To favor in stands:* Adapted hardwoods and loblolly pine or pure pine. *Other trees:* Cherrybark oak, sweetgum, black tupelo, yellow-poplar, blackjack oak, and water oak.	Moderate to severe.	Slight	Slight	Slight.
Group 15: Somewhat poorly drained soils that have a fine sandy loam or silt loam surface layer and a subsoil of loam, fine sandy loam, and silt loam; fragipan at a depth of 16 to 19 inches; slopes of 0 to 5 percent (SuA, PhB).	Loblolly pine Water oak Sweetgum Shortleaf pine Longleaf pine	95 80–90 80–89 87 77	*For planting:* Loblolly pine and adapted hardwoods. *To favor in stands:* Adapted hardwoods and loblolly pine or pure pine. *Other trees:* Cherrybark oak, sweetgum, black tupelo, yellow-poplar, and water oak.	Severe	Slight	Moderate	Slight.
Group 16: Moderately well drained and well drained soils that have a sandy loam surface layer and a silty clay loam, clay loam, and clay subsoil; slopes of 5 to 17 percent (StC2, StD2, StE).	Loblolly pine Longleaf pine Shortleaf pine	82–90 67–77 72–80	*For planting:* Loblolly, longleaf, slash, and shortleaf pines. *To favor in stands:* Pure pine or mixed hardwoods and pine. *Other trees:* Cherrybark oak, red oak, sweetgum, and black tupelo, all on lower slopes and around drainheads.	Moderate	Slight	Slight to moderate.	Moderate to severe.
Group 17: Well-drained to excessively drained soils that have a gravelly fine sandy loam surface layer; slopes of 12 to 40 percent (GgE, GgF).	Longleaf pine Shortleaf pine	75–85 65–75	*For planting:* Longleaf, shortleaf, and loblolly pines. *To favor in stands:* Pure pine or mixed oaks and pine. *Other trees:* Black cherry, cherrybark oak, red oak, white oak, and sweetgum.	Slight	Moderate	Moderate	Moderate to severe.
Group 18: Excessively drained soils that have a surface layer of loamy sand, sand, and loam; frequently flooded; slopes of 0 to 2 percent (Br, Sd).	Hardwoods Loblolly pine	--- ---	*For planting:* Adapted hardwoods. *To favor in stand:* Adapted hardwoods. *Other trees:* Willow, sweetgum, black tupelo, yellow-poplar, and cottonwood.	Slight to moderate.	Moderate to severe.	Moderate to severe.	Slight.
Group 19: Severely eroded and severely gullied areas (Gu).	Loblolly pine	---	*For planting:* Loblolly pine. *To favor in stand:* Loblolly pine. *Other trees:* Willow, sweetgum, black tupelo, yellow-poplar, and cottonwood.	Slight to moderate.	Moderate to severe.	Moderate to severe.	Severe.

[1] Absence of figure indicates that not enough data are available for estimating site index, or that the tree does not ordinarily grow on the soils of the woodland group.

Erosion hazard was rated according to the risk of erosion on well-managed woodland. The hazard is *slight* where only a small loss of soil is expected. Generally, erosion is a slight hazard if the slopes range from 0 to 2 percent and runoff is slow or very slow. Erosion hazard is *moderate* where a moderate loss of soil is expected unless runoff is controlled and plant cover is not adequate for protection. Erosion hazard is *severe* where slopes are steep, runoff is rapid, and the soils show past erosion.

Use of Soils for Wildlife and Fish [5]

The type of vegetation and the use of soils determine the kinds and numbers of wildlife that live in an area. Some kinds of wildlife are adapted to woodland, some to marshland, and some to open farmland, but a combination of these is required for most species. The kinds of soil in an area affect the vegetation that grows, and the vegetation has much to do in determining the wildlife. Also, the soils and the plants associated with them have much to do in determining the quality and quantity of water in a pond or stream, and in the productivity of fish. On all the soils in Walthall County are plants that are suitable as food, cover, or both, for various kinds of wildlife.

Changing patterns of farming have affected the kinds and numbers of wildlife in this county. In the early days of settlement, timber practically covered the county. Deer, squirrels, and turkeys were abundant. As the land was cleared for farming, these animals decreased in number because much of their habitat was destroyed. They were replaced by bobwhites, doves, rabbits, and many kinds of songbirds that were better adapted to open and semiopen areas. These animals and birds increased in number because the farming practiced created a habitat suitable for them.

The kinds and numbers of wildlife in this county change as trends in land use change. Because of reforestation and modern practices of timber management, the birds and animals that once lived in the forests are coming back. But the birds and animals that live on farmland have decreased in number because modern practices of farming have destroyed much of the vegetation needed to support this wildlife. Future use of the soils will determine the kinds and numbers of wildlife in the county.

Requirements of game and fish

Bobwhite Quail.—These birds need open and semiopen areas in which food is available near vegetation that provides protection from predators and adverse weather. Areas of row-crop farming generally provide a habitat of this kind. Quail eat the seed and some other parts of plants; in warm weather they eat insects. Choice foods are acorns, beechnuts, blackberries, browntop and Texas millets, black cherries, corn, cowpeas, flowering dogwood, mulberries, pine seeds, partridgepeas, ragweed, sweetgum, tickclover (beggartick), and Kobe, Korean, bicolor, and common lespedezas.

Deer.—Deer require wooded areas of 500 acres or more and a good supply of water. They eat a variety of plant foods, including many native plants. Choice foods are acorns, clover, corn, cowpeas, greenbrier, honeysuckle, oats, fescue, and wheat.

Doves.—Doves need water daily and open fields without thick ground cover. Choice foods are browntop millet, corn, croton, grain sorghum, panicgrass (several species), pine seed, pokeberry, ragweed, sweetgum, and wheat.

Ducks.—Ducks feed in areas of permanent water or areas that are flooded in winter. Some choice foods are acorns, beechnuts, corn, browntop and Japanese millets, and smartweeds.

Rabbits.—Good cover for rabbits is furnished by blackberry, multiflora rose, sericea lespedeza, and any low-growing bushes, shrubs, or annual weeds. Grasses, clovers, waste grain, and bark are the main foods.

Squirrels.—A few acres of woodland can support squirrels if hardwoods are in the stand. Choice foods are acorns, beechnuts, blackgum seeds, black cherry, corn, dogwood, hickory nuts, mulberry, maple seeds, pecans, and pine seeds.

Nongame Birds.—Many kinds of nongame birds live in Walthall County. Their habitat and their food vary. Some of these birds eat only insects, a few eat insects and fruits, and others eat insects, acorns, nuts, and fruits.

Fish. The principal game fish in ponds and streams are bass, bluegills and other sunfish, and channel catfish. Bluegill and most of the sunfish eat aquatic worms and insects and their larvae. Bass and channel catfish feed on small fish, frogs, crayfish, and other aquatic animals. In ponds the amount of food for fish and the poundage of usable fish produced are related to the fertility of the water and of the watershed and the bottom of the pond. Most ponds in the county need additions of fertilizer and lime if they are to produce a large amount of fish.

Wildlife suitability groups

In the following paragraphs, the suitability of the soils for use as wildlife habitat is discussed by groups of soil associations, or wildlife suitability groups. Each group is similar in its ability of producing plants suitable for supporting about the same kind of wildlife and of maintaining water at a quantity and quality high enough to support fish. The soil associations are shown on the colored map at the back of this survey and are described in the section "General Soil Map."

WILDLIFE SUITABILITY GROUP I

This wildlife group is made up of the Brookhaven-Providence-Ora soil association, which consists of moderately well drained and well drained, nearly level to sloping soils of the uplands. The association covers about 5 percent of the county and is in about equal acreages of pasture, row crops, and idle land. On the farms, which are small, the main field crops are cotton and corn.

In this wildlife group, quail, rabbits, and doves find excellent habitat consisting of small fields interspersed among wooded areas and idle land. The variety of plants suitable for food and cover is wide. Important plants that provide food for quail are annual lespedeza, perennial lespedeza, partridgepeas, beggarticks, and wild beans. In fall and winter the quail also eat oak acorns. Millet, cowpeas, lespedeza, and similar plants are commonly seeded to supply food for quail and other wildlife that frequent farms.

The many areas of blackberry briers, low brush, and annual weeds are excellent habitat for rabbits. Native and planted grasses add to their food.

[5] By Edward D. Sullivan, biologist, Soil Conservation Service.

Squirrels are the most numerous game animals that live in the wooded areas. These animals spend most of their time in areas of hardwoods because hardwood trees supply most of their food.

Because the soils in this group are nearly level to gently sloping, sites suitable for ponds of the levee type are not common. The soils, however, are suitable for fishponds, wherever they can be constructed.

WILDLIFE SUITABILITY GROUP II

This group is made up of Ora-Savannah-Ruston, Ora-Ruston, and Ruston-Ora soil associations. It covers about 78 percent of the county. The landscape is one of gently sloping, broad and narrow ridges and sloping to very steep side slopes. Most of the steeper slopes are wooded. Small general farms are scattered throughout the associations in this wildlife group. Livestock raising is important. Many small fields are in cotton, corn, hay, and silage crops. Pines are commercially important, and much of the area is in mixed pines and hardwoods.

The habitat in the soil associations of this group is suitable for many kinds of wildlife, but areas suitable for the game generally found on farms are dominant. The open farmland interspersed with woodland and idle areas is particularly suitable for bobwhite quail and rabbits. Several plants that supply choice food for quail are well suited to the soils and can be planted around edges of fields and in idle areas. Among these plants are lespedeza, soybeans, cowpeas, and millet. Quail also feed on waste grain in fields and on acorns in woodland. Natural cover is abundant.

The plants needed by rabbits for cover grow well on the soils of the wildlife group if space is provided for them. Areas are particularly well suited for rabbits, which generally are abundant around fields and pastures and at edges of woods.

Doves are limited to open fields and native pastures, where they feed on waste grain and the seed of native grasses and of woolly croton. Where slopes are not too steep, many varieties of millet can be planted to supply food for doves.

In this wildlife group, the rough topography limits the sites suitable for development into areas of water for ducks, but a few of the lakes and larger ponds provide marginal habitat.

Squirrels live mainly in woodland consisting of hardwoods and of hardwoods mixed with pines. Wild turkeys and deer are few, but the potential for increasing their number is good.

Woodland game is not plentiful in much of this area, because the trees are young and cannot support large numbers of game. As the stands of timber mature, wildlife is expected to increase.

WILDLIFE SUITABILITY GROUP III

This group is made up of the Ora-Guin-Ruston and Ruston-Lucy soil associations. It covers about 6 percent of the county and consists mainly of narrow to broad ridges and very steep side slopes. Most areas are in timber. Pines are the principal trees, but hardwoods grow along small streams and on the lower slopes. A small acreage on the narrow ridges is in crops and pasture.

The soil associations in this wildlife group are a good habitat for woodland game. In most areas enough hardwoods grow to support a moderate number of squirrels. Deer are increasing and are expected to become important as management provides more food and cover. Game on farms is limited to the few open areas and is not significant.

WILDLIFE SUITABILITY GROUP IV

This group is made up of the Cascilla-Collins-Falaya, Mantachie-Ochlockonee-Wehadkee, and Wehadkee-Mantachie soil associations. These associations are in narrow to moderately wide bands along streams throughout the county. They make up 9 percent of the county. Most areas are poorly drained and are subject to flooding. A large part of these associations is in hardwoods. The better drained areas are mostly in pasture, and a small part is in row crops.

The associations in this wildlife group contain some of the best habitat for woodland wildlife in the county. Since the trees are mostly hardwoods, squirrels, turkeys, and deer find excellent food and cover.

Practically all of the area suitable for ducks in the county is in this wildlife group. Ducks feed in many of the beaver ponds, and some beaver ponds not now used by ducks could be developed for them. Ducks also feed in a few low areas that are flooded in winter. Many other feeding areas for ducks could be developed on the stream bottoms. Among the plants that can be planted to supply choice food for ducks are browntop millet in the better drained areas and Japanese millet in the poorly drained areas.

Game birds and animals that are generally found on farms are limited to areas in or around fields and pastures. Some of the plants that provide food for quail are not adapted to wet soils of this group, but most of these plants grow well on the better drained soils. Swamp rabbits instead of cottontails inhabit the low, swampy areas.

Doves feed in and around cornfields where waste corn and grass seeds are available. Bull paspalum, a choice food for doves, is suited to the soils on bottom lands and around the edges of fields.

In this wildlife group sites are suitable only for dug ponds. During overflows wild fish enter these ponds unless levees are high enough to prevent the entrance of water.

WILDLIFE SUITABILITY GROUP V

Only the Prentiss-Stough-Cahaba soil association is in this group. It consists of somewhat poorly drained to well-drained soils on the flood plains and covers about 3 percent of the county. Most of it is in trees, mainly mixed hardwoods and a few pines, but there is a small acreage in pasture.

The soil association in this wildlife group is an excellent habitat for woodland wildlife. Deer, squirrels, and ducks are the main game animals. The game animals generally found on farms are few. Constructed fishponds must be dug, and their levees should be high enough to prevent the entrance of wild fish when the ponds overflow.

Engineering Uses of Soils [6]

This soil survey of Walthall County contains information useful in highway, agricultural, and sanitary engineering. It also contains information about the develop-

[6] PAUL A. CALHOUN, agricultural engineer, Soil Conservation Service, assisted in writing this subsection.

ment of communities, including recreational facilities. The information can be used to—

1. Make studies of soil and land use that will aid in selecting and developing industrial, business, residential, and recreational sites.
2. Assist in designing drainage and irrigation structures and in planning dams and other structures that will help to conserve soil and water.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting locations for highways and airports and in planning detailed investigations at the selected locations.
4. Locate probable sources of sand, gravel, and other construction materials.
5. Correlate performance of engineering structures with soil mapping and thus develop information that will be useful in planning, designing, and maintaining the structures.
6. Determine the suitability of soils for cross-country movement of vehicles and construction equipment.
7. Supplement the information from other published maps and reports and aerial photographs to make maps and reports that can be used readily by engineers.
8. Evaluate the limitations of soils used as sites for dwellings, with or without community sewerage systems.
9. Evaluate the limitations of soils used for campsites, intensive play areas, and other recreational facilities.

With the soil map for identification, the engineering interpretations in this subsection can be useful for many purposes. It should be emphasized, however, that the interpretations may not eliminate the need for sampling and testing at the site of specific engineering works where loads are heavy and where the excavations are deeper than here reported. Even in these situations, the soil map is useful for planning more detailed field investigations and for suggesting the kinds of problems that may be expected.

Some of the terms used by soil scientists may not be familiar to the engineer, and some terms may have a special meaning in soil science. Several of these terms are defined in the Glossary at the back of this survey.

Much of the information in this subsection is given in tables 3, 4, 5, and 6, but additional information useful to engineers can be found in other sections of this soil survey, particularly "Descriptions of the Soils" and "Formation, Classification, and Morphology of Soils."

Engineering classification systems

Two systems of classifying soils are in general use among engineers. Both are used in this survey.

Most highway engineers classify soil material according to the system approved by the American Association of State Highway Officials (AASHO) (*1*). In this system soil material is classified in seven principal groups. The groups range from A–1, consisting of gravelly soils having high bearing capacity, to A–7, consisting of clayey soils having low strength when wet. Within the group, the relative engineering value of the soil material is indicated by a group index number. Group index numbers range from 0 (A–1) for the best material to 20 (A–7) for the poorest material. In table 5 the group index number is shown in parentheses following the soil subgroup symbol; for example, A–4(6).

Some engineers prefer to use the Unified classification system established by the Waterways Experiment Station, Corps of Engineers (*9*). This system identifies the soils according to their texture and plasticity and groups them according to their performance as materials in engineering construction. The system establishes 15 soil groups, which are divided as (1) coarse-grained soils (8 classes), (2) fine-grained soils (6 classes), and (3) highly organic soils. The last column of table 5 gives the classification of the soils according to the Unified system.

Engineering properties of the soils

In table 3 are estimates, by layers, of important properties that affect the use of the soils in Walthall County in engineering. These estimates are based on the results of laboratory tests, on observations made in the field, and on the behavior of soils used in engineering structures. Gullied land and Sandy alluvial land are not included in table 3, because they vary so much that investigation on site is required. Some of the columns require explanation.

The depth from the surface is that of layers in a typical profile. The soil material in these layers is classified according to the textural terms used by the United States Department of Agriculture, and according to the AASHO and the Unified systems. Also listed for the layers are the estimated percentages of material that passes No. 4, No. 10, and No. 200 sieves. The estimates are based on the test data given in table 5, on data from similar soils in other counties, and on information obtained from other parts of this soil survey. The amount of material passing through a No. 200 sieve shows the separation of the coarse-grained and the fine-grained soils.

Permeability of the layers, in inches of water percolation per hour, was estimated for the soils in place. The permeability of each layer of a soil is important in planning drainage of a farm. Layers that impede drainage and those that are very permeable can greatly affect the suitability of the soil material for foundations. Permeability depends mainly on the texture and the structure of the soil, but it is also affected by other properties. Structure, consistence, and the content of organic matter should be considered when designing an irrigation system because they affect permeability and moisture-holding capacity of the soil.

Available water capacity, estimated in inches per inch of the soil depth, is the amount of capillary water in the soil when it is wet to field capacity.

The acid or alkaline reaction of the soil is expressed in pH. A pH of 7.0 is neutral; values lower than 7.0 are acid, and values higher are alkaline. Knowledge of reaction is useful if pipelines are to be constructed, as it indicates, among other things, likelihood of corrosion.

Dispersion is rated according to the degree and speed that soil structure breaks down and the soil slakes in water. An estimate of dispersion is useful in design and construction of highways, buildings, and other structures.

Shrink-swell potential is rated according to the expected volume change of the soil layers that is a result of change in the content of moisture. It is estimated primarily on the basis of the amount and type of clay in the soil layers and is rated as *low*, *moderate*, or *high* in table 3. In general, soils classified CH or A–7 have a high shrink-swell potential. Clean sands and gravels (single-grained

structure) and soils containing a small amount of nonplastic to slightly plastic fines have a low shrink-swell potential.

Engineering interpretations of the soils

In table 4 the soils of Walthall County are rated according to their suitability as sources of topsoil, sand, gravel, and road fill. Table 4 also names features that affect the location of highways, and the construction and maintenance of dikes and levees, farm ponds, drainage systems, irrigation systems, terraces and diversions, and waterways. These interpretations are based on experience with the same kinds of soils in other counties and on information in other parts of this soil survey. In this county difficulties in highway construction are caused mainly by characteristics of the soil material and by drainage. Bedrock is at such a great depth that it does not adversely affect the construction of highways.

In table 4 the suitability of soils for topsoil is rated *good*, *fair*, or *poor*. Topsoil is soil material used to topdress slopes, roadbanks, lawns, gardens, and other places. Important in rating suitability of soil material for use as topsoil are the productivity of the soil, the presence of coarse fragments, and the thickness of the material at its source.

The suitability of a soil as a source of sand and gravel is rated *good*, *fair*, *poor*, or *not suited*. The gravelly strata in the Coastal Plain sediments underlying the Saffell soils are a possible source of material that can be used in subbase and base courses of pavements and as surfacing for county roads. In some places the Ruston and Providence soils contain gravelly strata similar to those underlying the Saffell soils. These Coastal Plain strata normally contain clay and other materials that are not suitable for roads. The sand and gravel in the strata of the Ruston and Providence soils may not be suitable for use in concrete structures or for the surface course of a flexible pavement.

Road fill is soil material used for building up road grades. It is the material that supports the base layers. The properties important in evaluating soil material for use as road fill are shrink-swell potential, traffic-supporting capacity, inherent erodibility, and thickness of the material at its source. In table 4, the soils in the county are rated *good*, *fair*, *poor*, and *not suited* as a source of road fill. Ruston soils are rated good because shrink-swell potential is generally low, pressure volume change (PVC) is less than 2 percent, traffic-supporting capacity is good, inherent erodibility is less than severe, and the material is thicker than 6 feet at its source. Brookhaven soils are rated as fair because shrink-swell potential is low to moderate, pressure volume change (PVC) is 2 to 6 percent, traffic-supporting capacity is fair, inherent erodibility is severe or very severe, and the thickness of the material is 2 to 6 feet at its source.

Among the soil features that affect the location of highways are drainage and workability of the soil material when it is wet. These features affect grading and other earthwork in winter and early in spring. From December through April, rainfall in the county averages more than 4 inches per month and is evenly distributed. Unless artificial means of drying are used, earthwork may be delayed because the soil material does not dry enough. Also from December through April, the water table in most soils is at its highest level.

In this county, only the Saffell, Ruston, and Rumford soils are well suited to winter grading or other earthwork in winter and early in spring. These soils are permeable and dry rapidly, and their water table is below the normal depth of excavation. Earthwork is difficult in the finer textured Providence and Brookhaven soils in the winter months. A water table near the surface in winter and early in spring limits earthwork in the Bude, Frost, Collins, Falaya, Mashulaville, Ochlockonee, Iuka, Mantachie, and Wehadkee soils. In dry weather, earthwork in loessal soils is restricted when the content of moisture is slightly above the optimum for compaction.

For long periods each year, water is ponded on the surface of the Frost, Bude, and Mashulaville soils, or the water table is near the surface. Roads on these soils must be constructed on embankment sections, or provided with an adequate system of underdrains and surface drains. On soils that are subject to flooding, roads should be constructed on a continuous embankment that is several feet above the level of flooding. Soils of this kind are in the Mantachie, Ocklockonee, Iuka, Wehadkee, Collins, Falaya, and Cascilla series.

In planning the location of a highway, it is necessary to consider a fragipan or a claypan in the soils. These compact layers impede vertical drainage so much that water accumulates and a perched water table forms. Soils in Walthall County that have a fragipan or a compact layer are in the Brookhaven, Providence, Frost, Bude, Pheba, Savannah, Ora, Stough, and Prentiss series.

Soil features that influence the suitability of soil material for use in dikes and levees are permeability, stability, shrink-swell potential, and compaction. The use of Wehadkee soils, for example, is affected by moderate permeability and fair strength and stability.

Some of the soil features that affect the use of soils as reservoir areas are susceptibility to seepage or to flooding, permeability, and the level of the water table. Brookhaven soils, for example, are good as reservoir areas because they have slow seepage and are able to hold water. Rumford and Cahaba soils are only poor to fair as reservoir areas because seepage is excessive in some places.

Important features that affect the suitability of soil material for embankments are strength and stability, shrink-swell potential, compactability, seepage, permeability, and the content of coarse fragments.

Soil features affecting agricultural drainage are topography, natural drainage, susceptibility to flooding, and availability of outlets.

Some of the features considered in evaluating a soil for irrigation purposes are rate of water intake, permeability, water-holding capacity, and fertility.

Slope, depth to rock, and properties of the soil material are considered when determining the suitability of a soil for terraces and diversions.

Some of the important soil features that affect waterways are available water capacity, depth to the water table, erodibility, strength and stability, topography, and suitability for grasses.

Soil test data

Samples of Ochlockonee loam and Savannah silt loam were tested according to standard procedures of the American Association of State Highway Officials (AASHO) (*1*). Table 5 gives the data obtained from these tests and the classification of each sample according to both the AASHO and the Unified (*9*) systems.

TABLE 3.—*Estimated engineering*

Soil series and map symbols	Depth from surface	Classification		
		USDA texture	Unified	AASHO
	Inches			
Boswell (StC2, StD2, StE).	0–9	Sandy loam	ML	A–4
	9–56	Clay	CH	A–7
Brookhaven (BhA, BhB, BhB2).	0–8	Silt loam	ML	A–4
	8–19	Silt loam	CL	A–6
	19–26	Silt loam	CL	A–6
	26–58	Clay loam	CL	A–6
Bruno (Br).	0–56	Loamy sand	SM	A–2
Bude (BuA).	0–18	Silt loam	ML	A–4
	18–28	Silt loam to silty clay loam.	CL	A–6
	28–62	Loam to silt loam	ML–CL	A–6 or A–4
Cahaba (CaA, CaB).	0–9	Fine sandy loam	SM or ML	A–4
	9–33	Sandy clay loam	SC	A–6
	33–60	Silt loam	SM or SC	A–2, A–4
	60–66	Loamy sand to sand	SM	A–2
Cascilla (Cc).	0–20	Silt loam	ML	A–4
	30–35	Silt loam	ML–CL	A–4 or A–6
	35–50	Silt loam	ML	A–4
Collins (Co).	0–42	Silt loam	ML or ML–CL	A–4
	42–54	Loam	ML–CL	A–4
Falaya (Fa).	0–36	Silt loam	ML or ML–CL	A–4
	36–52	Silt loam	ML–CL	A–4
Frost (Fr)	0–24	Silt loam	ML	A–4
	24–54	Silty clay loam	CL or CH–CL	A–6 or A–7
Guin (GgE, GgF).	0–12	Gravelly sandy loam	GM	A–2
	12–40	Gravelly sandy loam to gravel.	GM	A–1
	40–60	Gravel	GM	A–1
Iuka (Oc).	0–8	Silt loam	ML	A–4
	8–54	Loam to silt loam	ML	A–4
Lucy (RlF).	0–35	Loamy sand	SM	A–2
	35–56	Sandy clay loam	CL	A–6
Mantachie (Ma).	0–5	Loam	ML	A–4
	5–12	Fine sandy loam	ML	A–4
	12–24	Loam	ML–CL	A–4
	24–50	Sandy loam	ML	A–4
Mashulaville (Ms).	0–19	Silt loam	ML	A–4
	19–46	Loam	ML–CL	A–4
Myatt (Mt).	0–46	Loam	ML–CL	A–4
	46–54	Silt loam	ML	A–4
Ochlockonee (Oc). (For properties of the Iuka soil in this mapping unit, refer to the Iuka series.)	0–31	Loam	ML or ML–CL	A–4
	31–40	Silt loam	SM or ML	A–4
	40–54	Loam	ML–CL	A–4
Ora (OrB, OrB2, OrB3, OrC2, OrC3, OrD2).	0–5	Loam	ML	A–4
	5–25	Sandy clay loam	CL	A–6
	25–40	Loam to silt loam	ML–CL	A–4 or A–6
	40–60	Silt loam	SM	A–4
Pheba (PhB).	0–16	Silt loam	ML	A–4
	16–38	Loam	CL	A–6
	38–50	Loam to silt loam	SM or ML	A–4

properties of the soils

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Dispersion	Shrink-swell potential
No. 4 (4.76 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)	*Inches per hour*	*Inches per inch of soil*	*pH*		
100	100	50–60	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	90 100	0. 2–0. 63	0. 24–0. 28	4. 5–5. 5	Moderate	Moderate to high.
100	100	85–95	0. 6–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	85 95	0. 63–2. 0	0. 20–0. 25	4. 5–5. 5	Moderate	Low.
100	100	85–95	0. 20–0. 63	0. 20–0. 35	4. 5–5. 5	Moderate	Low.
100	100	70–80	0. 20–0. 80	0. 15–0. 20	4. 5–5. 5	Moderate	Moderate.
100	100	15–25	>6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
100	100	90–98	0. 63–2. 0	0. 15–0. 25	4. 5–5. 5	High	Low.
100	100	90–98	0. 2–0. 63	0. 2–0. 25	4. 5–5. 5	Moderate	Low.
100	100	55–85	0. 63–0. 20	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	45–55	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	35–45	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Moderate	Low to moderate.
100	100	30–40	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	15–25	2. 0–6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
100	100	85–95	0. 63–2. 0	0. 20–0. 25	4. 5–5. 5	High	Low.
100	100	85–95	0. 20–0. 63	0. 20–0. 25	4. 5–5. 5	Moderate	Moderate.
100	100	85–95	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low to moderate.
100	100	85–95	0. 63–2. 0	0. 20–0. 25	4. 5–5. 5	Moderate	Moderate.
100	100	70–90	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low to moderate.
100	100	85–95	0. 63–2. 0	0. 20–0. 25	4. 5–6. 1	High	Low.
100	100	85–95	0. 63–2. 0	0. 20–0. 25	4. 5–6. 1	Moderate to high	Low.
100	100	85–95	0. 63–2. 0	0. 20–0. 25	4. 5–5. 5	High	Low.
100	100	90–100	0. 2–0. 63	0. 15–0. 20	4. 5–5. 5	Moderate	Moderate.
60–70	35–45	20–30	2. 0–6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
35–45	15–20	10–15	5. 0–10. 3	0. 05–0. 10	5. 0–5. 5	High	Low.
50–60	5 10		>6. 3	<0. 05			
100	100	50–60	0. 63–2. 0	0. 15–2. 0	4. 5–5. 5	High	Low.
100	100	50–60	0. 63 2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	15–25	>6. 3	0. 05–0. 09	4. 5 5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Moderate	Low to moderate.
100	100	60–70	0. 63–2. 0	0. 15–0. 20	4. 5 5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	70–80	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	50–70	<0. 20	0. 10–0. 15	4. 5 5. 5	High	Low.
100	100	55–70	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	45–55	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	60–70	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	55–70	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	55–65	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Moderate	Low.
100	100	50–55	0. 20–0. 63	0. 10–0. 15	4. 5–5. 5	Moderate	Low.
100	100	40–50	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	85–95	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	85–95	<0. 20	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	45–55	0. 2–0. 63	0. 10–0. 15	4. 5–5. 5	Moderate	Moderate to low.

TABLE 3.—*Estimated engineering*

Soil series and map symbols	Depth from surface	Classification		
		USDA texture	Unified	AASHO
	Inches			
Prentiss (PrA, PrB).	0–23	Fine sandy loam	ML–CL or ML	A-4
	23–40	Fine sandy loam	SM	A-4
	40–54	Loamy sand to sand	SM	A-2
Providence (PvB2, PvC2).	0–8	Silt loam	ML	A-4
	8–19	Silty clay loam	CL	A-6 or A-7
	19–40	Loam to silt loam	ML–CL	A-4
	40–60	Sandy clay loam	CL	A-6
Rumford (RfA).	0–24	Fine sandy loam	SM	A-4
	24–50	Sandy loam	SM	A-2 to A-4
Ruston (RuA, RuB, RuB2, RuC2, RuC3, RuD2, RuD3, RuE2, RuF, RuF2).	0–12	Fine sandy loam	SM	A-4
	12–28	Sandy clay loam	CL	A-6
	28–43	Sandy loam	SM or SC	A-2 or A-4
	43–60	Sandy clay loam	CL	A-6
Ruston (RlF). (For properties of the Lucy soil in this mapping unit, refer to the Lucy series.)	0–16	Fine sandy loam	SM	A-4
	16–40	Sandy clay loam	CL	A-6
	40–56	Loamy sand to sandy loam	SM	A-2 to A-4
Saffell (SaC2, SaD2)	0–11	Gravelly sandy loam	SM	A-2 or A-4
	11–21	Gravelly sandy clay loam	GC	A-2 or A-4
	21–27	Gravelly sandy loam	GC	A-2
	27–56	Gravelly loamy sand	GC	A-2
Savannah (ShA, ShB2, ShC2).	0–11	Silt loam	ML	A-4
	11–23	Loam	ML–CL	A-6
	23–53	Loam	ML–CL	A-6
	53–65	Sandy clay loam	ML–CL	A-7
Shubuta (StC2, StD2, StE). (For properties of the Boswell soil in these mapping units, refer to the Boswell series.)	0–5	Fine sandy loam	ML	A-4
	5–22	Silty clay loam	CH	A-7
	22–60	Clay loam	CL	A-6
Stough (SuA).	0–8	Fine sandy loam	ML	A-4
	8–16	Loam	ML	A-4
	16–54	Fine sandy loam	ML	A-4
Wehadkee (Wk).	0–2	Silt loam	ML	A-4
	2–11	Loam	ML	A-4
	11–20	Sandy clay loam	CL	A-6
	20–48	Clay loam	CL	A-6 or A-7

properties of the soils—Continued

Percentage passing sieve—			Permeability	Available water capacity	Reaction	Dispersion	Shrink-swell potential
No. 4 (4.76 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)	*Inches per hour*	*Inches per inch of soil*	*pH*		
100	100	55–70	0. 63–2. 0	0. 13–0. 17	4. 5–5. 5	High	Low.
100	100	40–50	0. 20–0. 63	0. 13–0. 17	4. 5–5. 5	High	Low.
100	100	20–30	>6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
100	100	80–90	0. 63–2. 0	0. 24–0. 28	4. 5–5. 5	High	Low.
100	100	90–98	0. 63–2. 0	0. 24–0. 28	4. 5–5. 5	Moderate	Low to moderate.
100	100	80–90	0. 2 –0. 63	0. 14–0. 18	4. 5–5. 5	Moderate	Moderate to low.
100	100	70–80	0. 63–2. 0	0. 14–0. 18	4. 5–5. 5	Moderate	Moderate to low.
100	100	35–45	2. 0 –6. 3	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	30–40	2. 0 –6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
100	100	35–45	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Moderate	Low to moderate.
100	100	30–40	2. 0 –6. 3	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Moderate	Low to moderate.
100	100	40–50	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Moderate	Low to moderate.
100	100	30–40	2. 0 –6. 3	0. 10–0. 15	4. 5–5. 5	High	Low.
80–90	75–85	30–40	2. 0 –6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
60–70	70–80	30–40	0. 63–2. 0	0. 19–0. 15	4. 5–5. 5	Moderate	Low.
40–50	50–70	20–30	2. 0 –6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
35–45	25–35	10–20	>6. 3	0. 05–0. 10	4. 5–5. 5	High	Low.
100	100	75–85	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	75–85	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	75–85	<0. 2	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	80–90	0. 6 –0. 63	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 10–0. 15	4. 0–5. 0	High	Low.
100	100	80–90	0. 2 –0. 63	0. 15–0. 20	4. 5–5. 5	Moderate	Moderate.
100	100	80–90	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 10–0. 15	4. 5–5. 0	High	Low.
100	100	55–70	0. 63–2. 0	0. 15–0. 20	4. 5–5. 0	High	Low.
100	100	50–60	<0. 2	0. 10–0. 15	4. 5–5. 0	Moderate	Low.
100	100	70–80	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	55–70	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	High	Low.
100	100	50–60	0. 63–2. 0	0. 15–0. 20	4. 5–5. 5	Moderate to high	Low to moderate
100	100	60–80	0. 2 –0. 63	0. 15–0. 20	4. 5–5. 5	Moderate	Moderate.

TABLE 4.—*Engineering*

[Gullied land (Gu) is so variable that

Soil series and map symbols	Suitability as source of—				Soil features affecting—	
	Topsoil	Sand	Gravel	Road fill	Location of highways	Dikes or levees
Boswell (StC2, StD2, StE).	Poor	Not suited	Not suited	Poor	Moderate to high shrink-swell potential in underlying soil material.	Slow permeability; fair stability.
Brookhaven (BhA, BhB, BhB2).	Fair	Not suited	Not suited	Fair	Fragipan that impedes internal drainage.	Fair stability and strength; low to moderate shrink-swell potential.
Bruno (Br)	Fair to poor.	Good to fair	Poor	Good	Susceptibility to flooding.	Rapid permeability.
Bude (BuA)	Fair	Not suited	Not suited	Fair	Fragipan that impedes internal drainage.	Fair strength and stability; low shrink-swell potential.
Cahaba (CaA, CaB)	Fair	Fair	Not suited	Good	Soil properties favorable; nearly level.	Moderate permeability; good stability.
Cascilla (Cc)	Good	Not suited	Not suited	Fair	Susceptibility to flooding.	Low to fair stability; low to moderate shrink-swell potential.
Collins (Co)	Good	Not suited	Not suited	Fair	Susceptibility to flooding.	Low to fair stability; low to moderate shrink-swell potential.
Falaya (Fa)	Good	Not suited	Not suited	Fair	Susceptibility to flooding.	Low stability; low shrink-swell potential.
Frost (Fr)	Good	Not suited	Not suited	Fair	High water table	Moderate permeability; fair stability in surface layer.
Guin (GgE, GgF)	Poor	Poor	Good	Good	Soil properties favorable, but slopes are steep to very steep.	Rapid permeability
Iuka (Oc)	Good	Fair; underlying material can be used for road base.	Poor	Good	Susceptibility to flooding.	Moderate permeability; fair strength and stability.
Lucy (RlF) (For interpretations of the Ruston soil in this mapping unit refer to the Ruston series.)	Poor	Generally good for subbase material.	Not suited	Good	Soil properties favorable, but slopes are very steep.	Moderate to rapid permeability; good stability.

interpretations of soils

interpretations for it were not made]

Soil features affecting—Continued					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Slow permeability	Fair stability	Not needed	Moderate to slow infiltration; slow permeability.	No undesirable features on moderate slopes.	Low natural fertility; moderate to low available water capacity.
Slow seepage	Fair strength and stability.	Excess surface water.	Slow infiltration; moderate available water capacity.	Soil properties favorable.	Moderate to shallow root zone; sod difficult to establish because of fragipan.
Very porous to a depth of 40 inches.	Moderate seepage; low to fair strength and stability.	Subsoil is easily drained if flooding is controlled.	High infiltration; low available water capacity.	Not needed	Low, nearly level position; sandy.
Slow seepage	Low to fair strength and stability; subject to piping; erodible.	Excess surface water.	Slow infiltration; moderate to low available water capacity.	Soil properties favorable.	Moderate to shallow root zone; sod difficult to establish because of fragipan.
Excessive seepage	Fair to good strength and stability.	Not needed	Moderate infiltration; moderate permeability; moderate available water capacity.	Soil properties favorable.	Moderate fertility; moderate available water capacity; sod easily established.
Slow seepage; subject to flooding.	Low stability; low to moderate shrink-swell potential.	Excess surface water; subject to flooding.	Slow infiltration	Soil properties favorable.	Sod easily established.
Slow seepage; subject to flooding.	Low stability; low to moderate shrink-swell potential.	Excess surface water; subject to flooding.	Slow infiltration; high available water capacity.	Soil properties favorable.	High available water capacity; sod easily established.
Slow seepage; subject to flooding.	Low strength and stability; slow seepage.	Excess surface water; subject to flooding.	Slow infiltration; high available water capacity.	Soil properties favorable.	High available water capacity; sod easily established.
Slow seepage	Fair strength and stability.	Drainage needed	Slow infiltration	Not needed	Moderate available water capacity; moderate erodibility.
High seepage	Rapid permeability; good strength and stability.	Not needed	Soil features poor for farming.	Steep slopes; gravelly soil.	Low available water capacity; gravelly; sod difficult to establish.
Moderate permeability; subject to flooding.	Fair strength and stability.	Not needed	Moderate infiltration; moderate permeability.	Not needed	Moderate available water capacity; sod easily established.
Excessive seepage	Fair to good strength and stability if soil material from upper and lower parts of profile is mixed.	Not needed	Moderate infiltration; slopes too steep for irrigation.	Soil properties favorable, but very steep slopes.	Moderate available water capacity; sod easily established.

TABLE 4.—*Engineering*

Soil series and map symbols	Suitability as source of—				Soil features affecting —	
	Topsoil	Sand	Gravel	Road fill	Location of highways	Dikes or levees
Mantachie (Ma)	Good	Poor	Poor	Fair	High water table; susceptibility to flooding.	Moderate permeability; fair strength and stability.
Mashulaville (Ms)	Fair	Not suited	Not suited	Fair	Perched water table; impeded drainage.	Moderate permeability; fair to good stability.
Myatt (Mt)	Fair to poor.	Not suited	Not suited	Poor	High water table	Moderate to slow permeability; fair strength and stability.
Ochlockonee (Oc)	Good	Underlying material is fair for road base in some areas.	Poor	Good	Susceptibility to flooding.	Moderate permeability; fair strength and stability.
Ora (OrB, OrB2, OrB3, OrC2, OrC3, OrD2).	Fair	Generally good for subbase material.	Not suited	Fair to good	Soil properties favorable; nearly level to strong slopes.	Moderate permeability; good stability.
Pheba (PhB)	Fair	Not suited	Not suited	Fair to good	Perched water table; drainage impeded by fragipan.	Moderate permeability; fair to good stability.
Prentiss (PrA, PrB)	Fair	Generally good for subbase material.	Not suited	Fair to good	Perched water table because of fragipan; nearly level to gently sloping.	Moderate permeability; good stability.
Providence (PvB2, PvC2)	Fair	Not suited	Not suited	Good	Fragipan that impedes internal drainage.	Fair stability; low to moderate shrink-swell potential.
Rumford (RfA)	Good to fair.	Good for subbase material.	Not suited	Good; soil properties favorable.	Soil properties favorable.	Moderate to rapid permeability; moderate stability.
Ruston (RlF, RuA, RuB, RuB2, RuC2, RuC3, RuD2, RuD3, RuE2, RuF, RuF2). (For interpretations of the Lucy soil in mapping unit RlF refer to the Lucy series.)	Fair	Generally fair for subbase material.	Not suited	Good	Soil properties favorable; nearly level to very steep.	Moderate permeability; good stability.
Saffell (SaC2, SaD2)	Poor	Poor	Good	Good	Soil properties favorable.	Rapid permeability; good strength and stability.

interpretations of soils—Continued

Soil features affecting—Continued					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Moderate permeability; subject to flooding.	Fair to good strength and stability.	Excess surface water; flooding.	Moderate infiltration; moderate permeability.	Not needed	High water table; moderate available water capacity.
Moderate to slow permeability.	Fair to good strength and stability.	High water table; excess surface water.	Moderate to slow infiltration; shallow root zone.	Soil properties favorable.	Moderate natural fertility; sod easily established.
Moderate to slow permeability; high water table.	Fair strength and stability.	High water table	Moderate to slow infiltration; moderate available water capacity.	Not needed	Sod easily established if soil is fertilized.
Moderate permeability; subject to flooding.	Fair strength and stability.	Not needed	Moderate infiltration; moderate permeability.	Not needed	Moderate available water capacity; sod easily established.
Excessive seepage below fragipan.	Fair to good strength and stability.	Not needed	Moderate infiltration; moderate permeability; moderate available water capacity.	Soil properties favorable.	Moderate natural fertility; moderate available water capacity.
Moderate to slow permeability below fragipan.	Fair to good strength and stability.	Excess surface water; shallow root zone.	Moderate to slow infiltration; shallow root zone.	Soil properties favorable.	Shallow; fragipan; sod easily established.
Excessive seepage below fragipan.	Fair to good strength and stability.	High water table; fragipan at depth of about 22 inches.	Moderate infiltration; moderate permeability; moderate available water capacity.	Soil properties favorable.	Moderate available water capacity; fragipan at depth of about 22 inches.
Excessive seepage below fragipan.	Fair strength and stability.	Surface drainage needed on nearly level slopes.	Slow infiltration; moderate available water capacity.	Soil properties favorable.	Moderate available water capacity.
Excessive seepage	Fair to good strength and stability.	Not needed	High or moderate infiltration; moderate to rapid permeability; low available water capacity.	Soil properties favorable.	Low natural fertility; low available water capacity; sod easily established.
Excessive seepage in lower part of profile.	Good strength and stability.	Not needed	Moderate infiltration; moderate permeability; moderate available water capacity.	Soil properties favorable on moderate slopes.	Moderate available water capacity; sod easily established.
Excessive seepage in some areas.	Good strength and stability.	Not needed	High infiltration; low to moderate available water capacity.	Soil properties favorable.	High infiltration; low natural fertility; low to moderate available water capacity.

TABLE 4.—*Engineering*

Soil series and map symbols	Suitability as source of—				Soil features affecting—	
	Topsoil	Sand	Gravel	Road fill	Location of highways	Dikes or levees
Sandy alluvial land (Sd)	Fair to poor.	Good	Poor	Fair	Susceptibility to frequent flooding.	Very rapid permeability.
Savannah (ShA, ShB2, ShC2).	Fair	Poor	Not suited	Fair to good	Perched water table because of fragipan; nearly level to moderate slopes.	Good stability
Shubuta (StC2, StD2, StE).	Poor	Not suited	Not suited	Poor	Moderate to high shrink-swell potential in underlying soil material.	Slow permeability; fair stability.
Stough (SuA)	Fair	Not suited	Not suited	Fair	Perched water table; drainage impeded by fragipan.	Moderate permeability; fair to good stability.
Wehadkee (Wk)	Fair	Poor	Poor	Fair	High water table; susceptibility to flooding.	Moderate permeability; fair strength and stability.

TABLE 5.—*Engineering*

[Tests performed by the Mississippi State Highway Department in cooperation with the U.S. Department of Commerce, Bureau

Soil name and location	Parent material	Bureau of Public Roads report No.	Depth	Horizon	Moisture-density	
					Maximum dry density	Optimum moisture
			Inches		*Lb. per cu. ft.*	*Percent*
Ochlockonee loam: NE¼NW¼ sec. 31, T. 3 N., R. 12 E.	Sandy coastal plain material.	499152	7–20	AC	113	13
		499153	20–36	C1	119	12
		499154	36–48	C2	119	11
		499155	58–72	C4	121	10
Savannah silt loam: SW¼SW¼ sec. 13, T. 2 N., R. 11 E.	Sandy coastal plain material.	499156	11–23	B21t	105	18
		499157	23–31	B22tx	110	17
		499158	31–53	B23tx	106	18
		499159	53–65	B24tx	103	20

[1] Engineering test data are given for Bude silt loam and Providence silt loam in the Lincoln County soil survey; for Frost silt loam in the Pike County soil survey; and for Ruston fine sandy loam in the Covington County soil survey.

[2] According to the AASHO Designation: T 88–57 (*1*). Results by this procedure frequently may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 milli-

interpretations of soils—Continued

Soil features affecting—Continued					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Very high seepage	Very rapid permeability.	Soil properties favorable.	Variable	Not needed	Not needed.
Slow permeability	Good strength and stability.	Surface drainage needed on slopes of 0 to 2 percent; soil properties favorable.	Moderate infiltration; moderate permeability; moderate to low available water capacity.	Soil properties favorable.	Moderate available water capacity; fragipan at depth of about 26 inches.
Slow permeability	Fair stability	Not needed	Moderate to slow infiltration; slow permeability.	Soil properties favorable on moderate slopes.	Low natural fertility; moderate to low available water capacity.
Moderate to slow permeability below fragipan.	Fair to good strength and stability.	High water table; shallow root zone.	Moderate to slow infiltration; shallow root zone.	Soil properties favorable.	Shallow; fragipan; sod easily established.
Subject to flooding; moderate permeability.	Fair to good strength and stability.	Surface drainage needed; high water table.	Moderate infiltration; moderate permeability.	Soil properties favorable.	Moderate available water capacity; high water table.

test data [1]

of Public Roads, in accordance with standard procedures of the American Association of State Highway Officials (AASHO) (*1*)]

Mechanical analysis [2]								Liquid limit	Plasticity index	Classification	
Percentage passing sieve—				Percentage smaller than—						AASHO [3]	Unified [4]
No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.25 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
100	99	94	65	60	50	20	14	24	6	A–4(6)	ML–CL.
100	100	91	55	48	39	23	18	25	8	A–4(4)	ML–CL.
100	99	89	53	42	36	21	16	25	8	A–4(4)	ML–CL.
100	99	81	27	25	16	10	7		[5] NP	A–2(0)	SM.
100	99	98	95	87	68	34	25	45	23	A–7(14)	ML–CL.
100	98	96	88	80	59	24	19	38	15	A–6(10)	ML–CL.
100	98	96	87	78	61	34	29	42	16	A–7(11)	ML–CL.
100	95	94	83	68	50	38	33	46	16	A–7(12)	ML–CL.

meters in diameter is excluded from calculations of grain-size fractions. The mechanical analyses data used in this table are not suitable for use in naming textural classes for soil.

[3] Based on AASHO Designation: M 145–49 (*1*).

[4] Based on the Unified Soil Classification System, Technical Memorandum No. 3–357, v. 1, Corps of Engineers (*9*). SCS and BPR have agreed to consider that all soils having plasticity indexes within two points of the A-line are to be given a borderline classification. An example of a borderline classification obtained by this use is ML–CL.

[5] Nonplastic.

TABLE 6.—*Limitations of soils*

Soil series and map symbols	Dwellings with community sewerage systems	Septic tank filter fields	Campsites
Boswell (StC2, StD2, StE)	Moderate: shrink-swell potential; bearing capacity.	Severe: slow percolation; slope.	Moderate or severe: trafficability; slope; moderate for slopes of less than 12 percent; severe for slopes of 12 to 17 percent.
Brookhaven (BhA, BhB, BhB2)	Moderate: water table; bearing capacity.	Severe: high water table; slow percolation because of fragipan.	Moderate: trafficability
Bruno (Br)	Severe: flooding	Severe: flooding	Severe: flooding
Bude (BuA)	Moderate: water table; bearing capacity.	Severe: high water table; slow percolation because of fragipan.	Moderate: trafficability
Cahaba (CaA, CaB)	Slight	Slight	Slight
Cascilla (Cc)	Severe: flooding	Severe: flooding	Severe: trafficability; flooding
Collins (Co)	Severe: flooding	Severe: flooding	Severe: trafficability; flooding
Falaya (Fa)	Severe: flooding; water table	Severe: high water table; flooding.	Severe: trafficability; flooding
Frost (Fr)	Severe: water table; flooding	Severe: slow percolation rate; high water table; flooding.	Severe: trafficability; flooding
Guin (GgE, GgF)	Moderate: slope	Moderate or severe: slope; moderate for slopes of less than 17 percent; severe for slopes of more than 17 percent.	Severe: slope
Iuka (Oc)	Severe: flooding	Severe: flooding	Moderate: flooding; water table.
Lucy (RlF)	Severe: slope	Severe: slope	Severe: slope
Mantachie (Ma)	Severe: water table; flooding; bearing capacity.	Severe: high water table; flooding.	Severe: water table; flooding
Mashulaville (Ms)	Severe: bearing capacity	Severe: perched water table; flooding; slow percolation rate.	Severe: water table; flooding
Myatt (Mt)	Severe: bearing capacity; water table; flooding.	Severe: high water table	Severe: water table; flooding
Ochlockonee (Oc)	Severe: flooding	Severe: flooding	Moderate: flooding; water table.
Ora (OrB, OrB2, OrB3, OrC2, OrC3, OrD2).	Slight or moderate: slope; slight for slopes of less than 8 percent; slight or moderate for slopes of more than 8 percent.	Severe: slow percolation because of fragipan.	Slight or moderate: slope; slight for slopes of less than 8 percent; moderate for slopes of more than 8 percent.
Pheba (PhB)	Moderate	Severe: perched water table; slow percolation because of fragipan.	Moderate or severe: water table.
Prentiss (PrA, PrB)	Moderate: water table	Severe: slow percolation because of fragipan; perched water table.	Moderate: water table; slope

used for community development

Picnic areas	Intensive play areas	Golf fairways	Trafficways
Moderate: trafficability; erodibility.	Moderate or severe: trafficability; erodibility; slope; moderate for slopes of less than 12 percent; severe for slopes of 12 to 17 percent.	Moderate: trafficability; slope.	Severe: erodibility; traffic-supporting capacity; slope.
Moderate: trafficability	Moderate: trafficability	Moderate or slight: trafficability; moderate for slopes of less than 2 percent; slight for slopes of more than 2 percent.	Moderate: water table; traffic-supporting capacity.
Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
Moderate: trafficability	Severe: trafficability	Moderate: trafficability	Moderate: water table; traffic-supporting capacity.
Slight	Slight	Slight	Slight.
Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: flooding; traffic-supporting capacity.
Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: flooding; traffic-supporting capacity.
Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: water table; flooding; traffic-supporting capacity.
Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: water table; flooding; traffic-supporting capacity.
Moderate or severe: slope; moderate for slopes of less than 17 percent; severe for slopes of more than 17 percent.	Severe: slope	Severe: slope	Moderate or severe: slope; moderate for slopes of less than 17 percent; severe for slopes of more than 17 percent.
Moderate: flooding	Moderate: flooding	Moderate: flooding	Moderate: flooding; water table.
Severe: slope	Severe: slope	Severe: slope	Severe: slope; erodibility.
Severe: flooding; water table	Severe: water table; flooding	Severe: water table; flooding	Severe: water table; flooding; traffic-supporting capacity.
Severe: water table; flooding	Severe: water table; flooding	Severe: water table; flooding	Severe: water table; flooding; traffic-supporting capacity.
Severe: water table; flooding	Severe: trafficability; water table; flooding.	Severe: water table; flooding	Severe: traffic-supporting capacity.
Moderate: flooding	Moderate: flooding	Moderate: flooding	Moderate: flooding; water table.
Slight or moderate: slight for slopes of less than 5 percent; moderate for slopes of more than 5 percent.	Slight or moderate: slope; slight for slopes of less than 5 percent; moderate for slopes of more than 5 percent.	Slight or moderate: slope; slight for slopes of less than 5 percent; moderate for slopes of more than 5 percent.	Slight or moderate: traffic-supporting capacity; slight for slopes of less than 5 percent; slight or moderate for severely eroded slopes of 5 to 8 percent and for slopes of more than 8 percent.
Moderate or severe: water table.	Moderate or severe: water table.	Moderate or severe: water table.	Moderate: water table.
Moderate: trafficability	Moderate: trafficability	Moderate: trafficability	Moderate: traffic-supporting capacity; water table.

TABLE 6.—*Limitations of soils used*

Soil series and map symbols	Dwellings with community sewerage systems	Septic tank filter fields	Campsites
Providence (PvB2, PvC2)	Slight	Severe: slow percolation because of fragipan.	Slight or moderate: slope; slight for slopes of less than 5 percent; moderate for slopes of 5 to 8 percent.
Rumford (RfA)	Slight	Slight	Slight
Ruston (RuA, RuB, RuB2, RuC2, RuC3, RuD2, RuD3, RuE2, RuF, RuF2, RlF).	Slight to severe: slope; slight for slopes of less than 12 percent; moderate for severely eroded slopes of 8 to 17 percent and for eroded slopes of 12 to 17 percent; severe for slopes of 17 to 40 percent.	Slight to severe: slope; slight for slopes of less than 8 percent; moderate for slopes of 8 to 17 percent; severe for slopes of 17 to 40 percent.	Slight to severe: slope; slight for slopes of less than 5 percent; moderate for most slopes of 5 to 12 percent; severe for severely eroded slopes of 8 to 17 percent and for slopes of 12 to 40 percent.
Saffell (SaC2, SaD2)	Slight	Slight	Moderate: slope
Savannah (ShA, ShB2, ShC2)	Moderate: water table	Severe: slow percolation because of fragipan.	Moderate: water table
Shubuta (StC2, StD2, StE)	Moderate: shrink-swell potential; bearing capacity.	Severe: slow percolation; slope.	Moderate or severe: slope; trafficability; moderate for slopes of less than 12 percent; severe for slopes of 12 to 17 percent.
Stough (SuA)	Severe: water table	Severe: perched water table; slow percolation.	Moderate or severe: water table.
Wehadkee (Wk)	Severe: flooding	Severe: flooding; high water table.	Severe: trafficability; flooding.

The samples were tested for compaction (moisture-density). If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, the density decreases as the content of moisture increases. The highest dry density obtained in the compaction test is called maximum dry density. Moisture-density data are important in earthwork, for as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

The engineering soil classifications in table 5 are based on data obtained by mechanical analyses and by tests to determine liquid limit and plastic limit. Mechanical analyses were made by the combined sieve and hydrometer methods. The percentage of clay obtained by the hydrometer method should not be used in naming the textural classes for soils.

The test for liquid limit and plastic limit measures the effect of water on the consistence of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is in a plastic condition.

Use of soils in community development

In table 6 the soils of Walthall County are rated *slight*, *moderate*, and *severe* according to the degree of their limitation for dwellings with community sewerage systems, septic tank filter fields, campsites, picnic areas, intensive play areas, golf fairways, and trafficways. If the rating is moderate or severe, the main limitation or limitations are also given. Gullied land (Gu) and Sandy alluvial land (Sd) are so variable that they are not included in the table.

DWELLINGS WITH COMMUNITY SEWERAGE SYSTEMS: Engineers and others should not apply specific values to the bearing capacity listed as a limitation to use for dwellings with community sewerage systems. Limitations to this use are *slight* if (1) the pressure volume change (shrink-swell) is 2 to 4 percent, or the shrinkage index is less than 5; (2) the water table is below a depth of 30 inches for more than 11 months of the year and is never above 15 inches; (3) flooding is not a hazard; (4) slopes are 2 to 12 percent; and (5) a fragipan or claypan is not above a depth of 50 inches.

Limitations are *moderate* if any one of the following apply: (1) The pressure volume change is 4 to 5 percent;

for community development—Continued

Picnic areas	Intensive play areas	Golf fairways	Trafficways
Slight	Slight or moderate: slope; slight for slopes of less than 5 percent; moderate for slopes of 5 to 8 percent.	Slight or moderate: slope; slight for slopes of less than 5 percent; moderate for slopes of 5 to 8 percent.	Slight or moderate: erodibility; slight for slopes of less than 5 percent; moderate for slopes of 5 to 8 percent.
Slight	Slight	Slight	Slight.
Slight to severe: slope; slight for slopes of less than 5 percent; moderate for slopes of 5 to 17 percent; severe for slopes of 17 to 40 percent.	Slight to severe: slope; slight for slopes of less than 5 percent; moderate for most slopes of 5 to 12 percent; severe for severely eroded slopes of 8 to 17 percent and for slopes of 12 to 40 percent.	Slight to severe: slope; slight for slopes of less than 5 percent; moderate for most slopes of 5 to 12 percent; severe for severely eroded slopes of 8 to 17 percent and for slopes of 12 to 40 percent.	Slight to severe: slope; erodibility; slight for slopes of less than 5 percent; slight or moderate for slopes of 5 to 8 percent; moderate for slopes of 8 to 17 percent; severe for slopes of 17 to 40 percent.
Slight or moderate: slope; slight for slopes of less than 8 percent; moderate for slopes of 8 to 12 percent.	Moderate: slope	Moderate: slope	Slight or moderate: slope; slight for slopes of less than 8 percent; moderate for slopes of 8 to 12 percent.
Moderate: trafficability; slope.	Moderate: trafficability; slope.	Moderate: trafficability; slope.	Moderate: traffic-supporting capacity; water table.
Moderate: trafficability; erodibility.	Moderate or severe: trafficability; erodibility; slope; moderate for slopes of less than 12 percent; severe for slopes of 12 to 17 percent.	Moderate: trafficability; slope.	Severe: erodibility; traffic-supporting capacity; slope.
Moderate or severe: water table; trafficability.	Moderate or severe: water table; trafficability.	Moderate or severe: trafficability; water table.	Moderate or severe: water table; traffic-supporting capacity.
Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: trafficability; flooding.	Severe: flooding.

(2) the water table is below a depth of 30 inches for less than 6 months of the year and is below 15 inches for more than 10 months; (3) flooding is not a hazard; (4) slopes are 12 to 25 percent; and (5) a fragipan or claypan is at a depth of 20 to 36 inches.

Limitations are *severe* if any one of the following apply: (1) The pressure volume change is more than 6 percent; (2) the water table is below a depth of 15 inches for 8 months of the year or less; (3) flooding is frequent to very infrequent; (4) slopes are more than 25 percent; and (5) a fragipan or claypan is at a depth of less than 20 inches.

SEPTIC TANK FILTER FIELDS: Limitations of soils used for septic tank filter fields are *slight* if (1) less than 50 minutes are required for water to percolate 1 inch; (2) the pressure volume change (shrink-swell) is 1 to 4 percent; (3) the water table is below a depth of 60 inches for 11 months of the year and is never above 30 inches; (4) flooding is not a hazard; (5) slopes are 0 to 12 percent; and (6) a fragipan or claypan is not above a depth of 50 inches.

Limitations are *moderate* if any one of the following apply: (1) Less than 50 minutes are required for water to percolate 1 inch; (2) the pressure volume change is 4 to 6 percent, or the shrinkage index is 7 to 10; (3) the water table is below a depth of 60 inches for more than 9 months of the year and is always below 12 inches (correlates approximately with moderately well drained soils); (4) flooding is not a hazard; (5) slopes are 12 to 25 percent; and (6) a fragipan or claypan is not above a depth of 50 inches.

Limitations are *severe* if any one of the following apply: (1) More than 50 minutes are required for water to percolate 1 inch; (2) the pressure volume change is more than 6 percent; (3) the water table is below a depth of 15 inches for less than 12 months each year (correlates approximately with somewhat poorly drained to poorly drained soils); (4) flooding is infrequent to frequent; (5) slopes are more than 25 percent; and (6) a fragipan or claypan is at a depth of less than 36 inches.

CAMPSITES: A campsite is an area suitable for pitching tents and for living outdoors for at least a week. Little preparation of the soils at the site is required. Wetness is a serious limitation. Favorable features are an attractive landscape, good foot trafficability, and at least moderate stands of grass and trees. Limitations of soils used for campsites are *slight* if (1) the slope is 0 to 5 percent; (2) trafficability is good; and (3) inherent erodibility is slight or moderate.

Limitations are *moderate* if (1) the slope is 5 to 12 percent; (2) trafficability is fair; or (3) inherent erodibility is severe.

The limitations are *severe* if (1) the slope is more than 12 percent; (2) trafficability is poor; or (3) inherent erodibility is very severe.

PICNIC AREAS: These are areas suitable for pleasure outings at which a meal is eaten out of doors. Picnic tables and fireplaces are usually furnished, and very little site preparation is needed. About the only requirements are an attractive landscape, good foot trafficability, and a suitable slope.

Limitations of soils used for picnic areas are *slight* if (1) the slope is 0 to 12 percent; (2) trafficability is good; and (3) inherent erodibility is slight or moderate.

Limitations are *moderate* if (1) the slope is 12 to 25 percent; (2) trafficability is fair; or (3) inherent erodibility is severe.

The limitations are *severe* if (1) the slope is more than 25 percent; (2) trafficability is poor; or (3) inherent erodibility is very severe.

INTENSIVE PLAY AREAS: These are areas developed for playgrounds and for baseball diamonds, tennis and badminton courts, and other sites for other organized games. The soils in these areas are subject to intensive foot traffic. Generally required are a nearly level surface, good drainage, and a firm surface. The areas should be free of coarse fragments and outcrops of rock.

Limitations of soils used for intensive play areas are *slight* if (1) the slope is less than 6 percent; (2) depth to the fragipan or claypan is more than 36 inches; and (3) trafficability is good.

The limitations are *moderate* if (1) the slope is 5 to 12 percent; (2) the fragipan or claypan is not above a depth of 36 inches; or (3) trafficability is fair.

The limitations are *severe* if (1) the slope is 12 to more than 25 percent; (2) a fragipan or claypan is at a depth between 10 and 36 inches; or (3) trafficability is poor to very poor.

GOLF FAIRWAYS: In rating the soils for golf fairways, suitability for the rough, for hazards, and for putting greens is not rated. A wide variety of soils is suitable for the rough and the hazards, and the greens are manmade. But soils used for golf fairways should be able to withstand foot and cart traffic, especially soon after a rain. Also important are the amount of coarse fragments, suitability for grass, and the slope.

Limitations of soils used for golf fairways are *slight* if (1) trafficability is good; (2) the area is free of coarse fragments; (3) productivity is medium to high; and (4) the slope is less than 5 percent.

Limitations are *moderate* if (1) trafficability is fair; (2) the area is free of coarse fragments; (3) productivity is medium to high; or (4) the slope is 5 to 12 percent.

Limitations are *severe* if (1) trafficability is poor to very poor; (2) coarse fragments are on the surface; (3) productivity is low; or (4) the slope is more than 12 percent.

TRAFFICWAYS: This term refers to low-cost roads and residential streets that can be built without much cutting, filling, and preparation of subgrade.

Limitations of soils used for trafficways are *slight* if (1) the slope is 0 to 12 percent; (2) the fragipan or claypan is not above a depth of 36 inches; (3) the water table is below a depth of 30 inches for more than 9 months of the year and is always below 15 inches; (4) flooding is not a hazard or is infrequent; (5) inherent erodibility is slight or moderate; (6) traffic-supporting capacity is good.

Limitations are *moderate* for trafficways if any one of the following apply: (1) The slope is 12 to 25 percent; (2) a fragipan or claypan is at a depth of 10 to 36 inches; (3) the water table is below a depth of 15 inches for 8 months of the year; (4) floods do not occur every year, and they last for less than 7 days; (5) inherent erodibility is severe; and (6) traffic-supporting capacity is fair.

Limitations are *severe* if any one of the following applies: (1) The slope is more than 25 percent; (2) the fragipan or claypan is below a depth of less than 10 inches; (3) the water table is below a depth of 15 inches for less than 8 months each year; (4) floods lasting more than 7 days occur more than once every year; (5) inherent erodibility is very severe; and (6) traffic-supporting capacity is poor.

Descriptions of the Soils

This section describes the soil series, or groups of similar soils, and the single soils, or mapping units, of Walthall County. The acreage and proportionate extent of each mapping unit are given in table 7.

The procedure in this section is first to describe the soil series and then the mapping units representing that series. Thus, to get full information on a mapping unit, it is necessary to read the description of that unit and also the description of the soil series to which it belongs. As mentioned in the section "How This Survey Was Made," not all mapping units are of a soil series. For example, Gullied land and Sandy alluvial land are miscellaneous land types and do not belong to a soil series; nevertheless, they are listed in alphabetic order along with the series.

Following the name of each mapping unit, there is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit is the capability unit, woodland suitability group, and woodland forage site in which the mapping unit has been placed. The pages on which each capability unit and forage site are described can be found by referring to the "Guide to Mapping Units" at the back of this survey.

Soil scientists, engineers, students, and others who want detailed descriptions of the soil series should turn to the section "Formation, Classification, and Morphology of Soils." Many terms used in the descriptions of mapping units and other sections are defined in the Glossary and the "Soil Survey Manual" (*6*).

Boswell Series

The Boswell series consists of moderately well drained soils that have a sandy loam surface layer and a clay subsoil. These soils are on moderate to steep slopes adjacent to the heads of streams. The main layers of a typical profile are—

0 to 9 inches, very dark gray, very friable sandy loam.
9 to 18 inches, red, plastic clay.
18 to 50 inches, red, plastic clay mottled with pale brown and gray.
50 to 56 inches, light-gray, plastic clay mottled with red.

In this county Boswell soils are mapped only with Shubuta soils in undifferentiated soil groups.

Brookhaven Series

The Brookhaven series consists of moderately well drained, acid soils that have a fragipan at a depth of 18 to

TABLE 7.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent	Soil	Acres	Percent
Brookhaven silt loam, 0 to 2 percent slopes	1, 636	0. 6	Ruston fine sandy loam, 2 to 5 percent slopes, eroded	26, 898	10. 4
Brookhaven silt loam, 2 to 5 percent slopes	1, 964	. 8	Ruston fine sandy loam, 5 to 8 percent slopes, eroded	12, 204	4. 7
Brookhaven silt loam, 2 to 5 percent slopes, eroded	1, 501	. 6	Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded	1, 422	. 5
Bruno loamy sand	291	. 1	Ruston fine sandy loam, 8 to 12 percent slopes, eroded	15, 163	5. 9
Bude silt loam, 0 to 2 percent slopes	171	(1)	Ruston fine sandy loam, 12 to 17 percent slopes, eroded	18, 284	7. 1
Cahaba fine sandy loam, 0 to 2 percent slopes	1, 325	. 5	Ruston fine sandy loam, 8 to 17 percent slopes, severely eroded	4, 035	1. 6
Cahaba fine sandy loam, 2 to 5 percent slopes	1, 050	. 4	Ruston fine sandy loam, 17 to 40 percent slopes	21, 281	8. 3
Cascilla silt loam	1, 651	. 6	Ruston fine sandy loam, 17 to 40 percent slopes, eroded	4, 194	1. 6
Collins silt loam	377	. 2	Ruston-Lucy complex, 17 to 40 percent slopes	2, 362	. 9
Falaya silt loam	2, 789	1. 1	Saffell gravelly fine sandy loam, 2 to 8 percent slopes, eroded	611	. 2
Frost silt loam	389	. 2	Saffell gravelly fine sandy loam, 8 to 12 percent slopes, eroded	453	. 2
Guin gravelly fine sandy loam, 12 to 17 percent slopes	717	. 3	Sandy alluvial land	391	. 2
Guin gravelly fine sandy loam, 17 to 40 percent slopes	1, 995	. 8	Savannah silt loam, 0 to 2 percent slopes	744	. 3
Gullied land	40	(1)	Savannah silt loam, 2 to 5 percent slopes, eroded	3, 271	1. 3
Mantachie soils	14, 200	5. 5	Savannah silt loam, 5 to 8 percent slopes, eroded	153	(1)
Mashulaville silt loam	255	(1)	Shubuta and Boswell soils, 5 to 8 percent slopes, eroded	326	. 1
Myatt loam	1, 034	. 4	Shubuta and Boswell soils, 8 to 12 percent slopes, eroded	866	. 3
Ochlockonee-Iuka soils	8, 976	3. 5	Shubuta and Boswell soils, 12 to 17 percent slopes	346	. 1
Ora loam, 2 to 5 percent slopes	6, 944	2. 7	Stough fine sandy loam, 0 to 3 percent slopes	3, 154	1. 2
Ora loam, 2 to 5 percent slopes, eroded	52, 216	20. 2	Wehadkee silt loam	7, 091	2. 7
Ora loam, 2 to 5 percent slopes, severely eroded	286	. 1			
Ora loam, 5 to 8 percent slopes, eroded	13, 298	5. 2			
Ora loam, 5 to 8 percent slopes, severely eroded	1, 113	. 4			
Ora loam, 8 to 12 percent slopes, eroded	1, 190	. 5			
Pheba silt loam, 0 to 5 percent slopes	1, 837	. 7			
Prentiss fine sandy loam, 0 to 2 percent slopes	1, 940	. 8			
Prentiss fine sandy loam, 2 to 5 percent slopes	986	. 4			
Providence silt loam, 2 to 5 percent slopes, eroded	2, 487	1. 0			
Providence silt loam, 5 to 8 percent slopes, eroded	1, 675	. 6			
Rumford fine sandy loam, 0 to 2 percent slopes	1, 438	. 5			
Ruston fine sandy loam, 0 to 2 percent slopes	443	. 2			
Ruston fine sandy loam, 2 to 5 percent slopes	8, 457	3. 3	Total	257, 920	100. 0

[1] Less than 0.1 percent.

23 inches. These soils are on broad, nearly level and gently sloping ridges. Slopes range from 0 to 5 percent. Brookhaven soils developed in a thin silty mantle and the underlying medium- to coarse-textured material. The main layers of a typical profile are—

0 to 8 inches, dark-brown to black, friable silt loam.
8 to 19 inches, yellowish-brown, friable heavy silt loam.
19 to 26 inches, mottled light-gray, pale-brown, and yellowish-brown, slightly compact and brittle silt loam (fragipan).
26 to 34 inches, mottled yellowish-brown, gray, and dark-brown, firm, compact and brittle light clay loam (fragipan).
34 to 58 inches, mottled strong-brown, light-gray, yellowish-brown, and red, firm, compact and brittle light clay loam (fragipan).

Brookhaven silt loam, 0 to 2 percent slopes (BhA).—This nearly level soil is moderately well drained and has a fragipan in the lower subsoil. The surface layer is dark grayish-brown to black silt loam 6 to 10 inches thick. The subsoil to a depth of 16 to 22 inches consists of yellowish-brown to strong-brown heavy silt loam. It is underlain by about 7 inches of mottled brown, yellow, and gray, slightly compact silt loam, which is the upper part of the fragipan. The lower part of the fragipan is mottled yellow, brown, red, and gray silt loam or clay loam. Included in mapping were areas of Frost, Providence, and Bude soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid and has medium natural fertility. Available water capacity is moderate. Roots and water easily penetrate the surface layer and upper subsoil, but not the fragipan. The content of organic matter is low. This soil generally has good tilth, but it crusts and packs when bare. It can be cultivated throughout a wide range of moisture content. Runoff is slow to moderate, and the hazard of erosion is generally slight.

This soil is used mainly for pasture and trees, but much of it is in corn, cotton, and oats. Under good management, this soil produces favorable yields of the crops commonly grown in the county. Crops respond well to added lime and fertilizer. In the wooded areas are mixed hardwoods, longleaf pine, and loblolly pine. Pines are well suited to this soil. (Capability unit IIw–6; woodland group 5; woodland forage site 4)

Brookhaven silt loam, 2 to 5 percent slopes (BhB).—This gently sloping soil is moderately well drained and has a fragipan in the lower subsoil. The surface layer is very dark grayish-brown to dark grayish-brown silt loam 6 to 10 inches thick. The subsoil to a depth of 16 to 22 inches consists of strong-brown heavy silt loam or silty clay loam. Below that depth is mottled yellowish-brown, brown, and gray, slightly compact silt loam about 7 inches thick. This is the upper part of the fragipan. The lower part consists

of mottled yellow, brown, gray, and red silty clay loam or clay loam. Included in mapping were areas of Providence soils that make up from 5 to 10 percent of the area mapped.

This soil is strongly acid and medium in natural fertility. Available water capacity is moderate. Roots and water easily penetrate the surface layer and upper subsoil, but not the fragipan. The content of organic matter is low. This soil generally has good tilth, but it crusts and packs when bare. It can be cultivated throughout a wide range of moisture content. Runoff is moderate, and the hazard of erosion is generally slight.

This soil is used mostly for trees and pasture, but some areas are in row crops. Under good management, yields of the locally grown crops are favorable. The crops respond well to lime and fertilizer. Loblolly, slash, and longleaf pines are well suited. Mixed hardwoods grow in some areas. (Capability unit IIw–6; woodland group 5; woodland forage site 4)

Brookhaven silt loam, 2 to 5 percent slopes, eroded (BhB2).—This is a gently sloping, moderately well drained, eroded soil that has a fragipan in the lower subsoil. The surface layer is dark grayish-brown to brown silt loam 4 to 6 inches thick. In a few eroded spots, the strong-brown subsoil is exposed. Rills and a few shallow gullies have formed in some places. The subsoil consists of strong-brown to yellowish-brown heavy silt loam or light silty clay loam to a depth of 16 to 18 inches. Below that depth is mottled brown, yellow, and gray, slightly compact silt loam about 4 to 6 inches thick. This is the upper part of the fragipan. The lower part extends to a depth of about 58 inches and consists of mottled brown, yellow, red, and gray, compact sandy clay loam and clay loam. Included in mapping were small areas of Ora and Providence soils that make up about 10 percent of the total acreage. Also included were small areas of a Brookhaven soil that has a loam surface layer.

This Brookhaven silt loam is strongly acid and has medium natural fertility. Available water capacity is moderate. Roots and water easily penetrate the upper subsoil, but not the fragipan. The content of organic matter is low. This soil generally has good tilth. It can be worked throughout a wide range of moisture content, but it crusts and packs when bare. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

Most of this soil has been cleared and is used for pasture and crops, but some small areas are in pine trees. Loblolly, shortleaf, and longleaf pines are well suited. Under good management, this soil produces favorable yields of all locally grown crops. (Capability unit IIw–6; woodland group 5; woodland forage site 4)

Bruno Series

The Bruno series consists of well-drained to excessively drained, sandy soils on alluvium of the flood plains. Slopes range from 0 to 2 percent. The main layers of a typical profile are—

0 to 30 inches, light yellowish-brown, loose loamy sand.
30 to 40 inches, brown, loose loamy sand.
40 to 56 inches, grayish-brown, loose loamy sand.

Bruno loamy sand (0 to 2 percent slopes) (Br).—This well-drained to excessively drained soil on bottom lands has a light yellowish-brown to very dark grayish-brown loamy sand surface layer 10 to 30 inches thick. The underlying material is loamy sand or coarse sandy loam. Included in mapping were areas of Ochlockonee soils and Sandy alluvial land that make up 5 to 8 percent of the area mapped. Also included were small areas that have a surface layer of loam, coarse sandy loam, or sand.

This soil is strongly acid and has low natural fertility. It is generally droughty but is subject to occasional flooding.

Woodland is the present use. Willow, cottonwood, and similar trees are suited. (Capability unit Vw–1; woodland group 18; woodland forage site 3)

Bude Series

The Bude series consists of somewhat poorly drained, acid soils that have a fragipan at a depth of 14 to 18 inches. These soils are in small, nearly level areas. Slopes range from 0 to 2 percent. Bude soils developed in a thin silty mantle that is underlain by loamy material. The main layers of a typical profile are—

0 to 7 inches, very dark gray, very friable silt loam.
7 to 18 inches, brownish-yellow, friable silt loam mottled with light gray and brownish gray.
18 to 28 inches, mottled light brownish-gray and strong-brown, firm, compact and brittle silt loam or silty clay loam (fragipan).
28 to 62 inches, brownish-yellow heavy loam or silt loam mottled with strong brown and gray; firm, compact and brittle (fragipan).

Bude silt loam, 0 to 2 percent slopes (BuA).—This nearly level soil is somewhat poorly drained and has a fragipan in the lower subsoil. The surface layer is very dark gray to dark grayish-brown silt loam 6 to 8 inches thick. The upper subsoil extends to a depth of 14 to 18 inches and consists of yellowish-brown to brownish-yellow silty loam to light silty clay loam with grayish mottles. The fragipan is mottled brown, yellow, and gray silt loam, loam, or clay loam. Included in mapping were areas of Frost and Brookhaven soils that make up 4 to 6 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the surface layer and upper subsoil, but not the fragipan. Organic-matter content is low. Runoff is slow, and the hazard of erosion is generally slight.

Most of this soil is in pine and hardwood trees, but small areas have been cleared and are used for pasture. Loblolly, longleaf, and slash pines are well suited. Under good management, this soil produces moderate yields of the crops commonly grown in the county. Crops respond fairly well to added lime and fertilizer. (Capability unit IIIw–1; woodland group 14; woodland forage site 4)

Cahaba Series

The Cahaba series consists of well-drained, acid, level to gently sloping soils along the major streams in the county. Slopes range from 0 to 5 percent. These soils developed in loam and sandy clay loam material. The main layers of a typical profile are—

0 to 6 inches, dark grayish-brown, very friable fine sandy loam.
6 to 9 inches, mixed reddish-brown and dark grayish-brown, very friable fine sandy loam.
9 to 33 inches, yellowish-red, friable sandy clay loam.
33 to 41 inches, strong-brown, very friable sandy loam.

41 to 60 inches, mixed yellowish-brown and light yellowish-brown, very friable light sandy loam to loamy sand.
60 to 66 inches, light-gray, very friable loamy sand to sand, mottled with pale brown and yellowish brown.

Cahaba fine sandy loam, 0 to 2 percent slopes (CaA).—This is a well-drained soil on stream terraces. It has a brown to dark grayish-brown fine sandy loam surface layer. The upper subsoil of yellowish-red sandy clay loam is underlain by yellowish-brown to light-gray light sandy loam to loamy sand at a depth of 28 to 44 inches. Included in mapping were areas of Prentiss, Stough, and Rumford soils that make up 5 to 10 percent of the area mapped. Also included were small areas of Cahaba soils that have a loam, gravelly sandy loam, or loamy sand surface layer.

This soil is strongly acid, is moderate in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the subsoil. This soil generally has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is slow in cultivated areas, and the hazard of erosion is slight. The included areas that have a loamy sand surface layer are droughty.

Most of this soil is used for pasture, but some of the smaller areas are in row crops and trees. Under good management, this soil is well suited to the locally grown crops. Loblolly, longleaf, and shortleaf pines are also well suited. Crops respond well to added lime and fertilizer. (Capability unit I 1; woodland group 1; woodland forage site 1)

Cahaba fine sandy loam, 2 to 5 percent slopes (CaB).—This well-drained soil has a brown to very dark grayish-brown fine sandy loam surface layer. The upper subsoil of strong-brown to yellowish-red sandy clay loam is underlain by strong-brown sandy loam at a depth of 36 to 40 inches. Included in mapping were eroded areas covering less than 1 percent of the area mapped and areas of Prentiss and Rumford soils covering 2 to 8 percent. Other inclusions are small areas of Cahaba soils that have a loam or loamy sand surface layer.

This soil is strongly acid, is moderate in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the subsoil. This soil generally has good tilth, and it can be worked throughout a wide range of moisture content. The included areas that have a loamy sand surface layer are droughty. Runoff is moderate, and in cultivated areas, the hazard of erosion is slight to moderate.

Most of this soil is in pasture, but some small areas are used for row crops and trees. Under good management, this soil is well suited to all crops grown locally. Loblolly, shortleaf, and longleaf pines are also well suited. Crops respond well to added lime and fertilizer. (Capability unit IIe–1; woodland group 1; woodland forage site 1)

Cascilla Series

The Cascilla series consists of well-drained soils on flood plains. Slopes range from 0 to 2 percent. These soils developed in alluvium. The main layers of a typical profile are—

0 to 9 inches, dark-brown to very dark grayish-brown, very friable silt loam.
9 to 20 inches, dark-brown, friable silt loam.
20 to 35 inches, dark-brown, friable heavy silt loam.
35 to 46 inches, dark-brown, friable silt loam mottled with yellowish brown.
46 to 50 inches, mottled yellowish-brown, dark-brown, and pale-brown, friable silt loam.

Cascilla silt loam (0 to 2 percent slopes) (Cc).—This is a well-drained soil adjacent to streams in the north-central part of the county. It is very dark grayish-brown to dark-brown silt loam to a depth of 20 inches. Between that depth and 40 to 46 inches is brown to dark-brown heavy silt loam that has a few coatings or mottlings of dark brown or yellowish brown. This layer is underlain by mottled yellowish-brown, pale-brown, and dark-brown silt loam containing a large amount of sand. Included in mapping were areas of Collins soils that make up 2 to 5 percent of the area mapped.

This soil is strongly acid and is medium in natural fertility. It is easily penetrated by roots and water to a depth of several feet. Tilth is generally good. This soil can be worked throughout a fairly wide range of moisture content, but it tends to crust and pack when bare. Flooding is a hazard.

This soil is used mainly for pasture and trees, but hay and row crops are also grown to some extent. Hardwoods and loblolly pine are well suited. Under good management, that includes draining the low-lying areas, this soil is well suited to the commonly grown crops and pasture grasses. Crops respond well to added lime and fertilizer. (Capability unit IIw–1; woodland group 7; woodland forage site 5)

Collins Series

The Collins series consists of moderately well drained soils in alluvium on narrow to broad flood plains. Slopes range from 0 to 2 percent. The main layers of a typical profile are—

0 to 8 inches, very dark brown, friable silt loam.
8 to 20 inches, dark-brown, friable silt loam mottled with yellowish brown.
20 to 29 inches, mottled dark-brown, dark yellowish-brown, pale-brown, and light-gray, friable silt loam.
29 to 42 inches, mottled light-gray, yellowish-brown, and brown to dark-brown, friable silt loam.
42 to 54 inches, gray or light-gray, friable loam mottled with yellowish brown.

Collins silt loam (0 to 2 percent slopes) (Co).—This is a moderately well drained soil that has a surface layer of brown to very dark grayish-brown silt loam. Normally, the surface layer is 8 inches thick. To a depth of 18 to 29 inches the material is dark-brown to yellowish-brown silt loam, which is underlain by silt loam to loam mottled with shades of gray, yellow, and brown. Included in mapping were areas of Cascilla and Falaya soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has high available water capacity. Roots and water easily penetrate the upper part of this soil, but they are impeded in the lower layers by the fluctuating water table. This soil generally has good tilth. It can be worked throughout a fairly wide range of moisture content, but it tends to crust and pack when bare. Flooding is a hazard.

This soil is used mainly for pasture and trees, but crops are grown in some areas. Crops respond well to added lime and fertilizer. Under good management, this soil is well suited to crops and pasture grasses. It is also well suited to hardwoods and loblolly pine. Drainage is needed in low-lying areas. (Capability unit IIw–2; woodland group 7; woodland forage site 5)

Falaya Series

The Falaya series consists of somewhat poorly drained soils in alluvium on narrow to broad flood plains. Slopes range from 0 to 2 percent. The main layers of a typical profile are—

0 to 4 inches, mixed very dark grayish-brown and dark grayish-brown, friable silt loam.
4 to 22 inches, very dark grayish-brown, friable silt loam mottled with light gray.
22 to 31 inches, mottled very dark grayish-brown and light-gray, friable silt loam.
31 to 36 inches, mottled gray and dark yellowish-brown, friable silt loam.
36 to 52 inches, gray, friable silt loam mottled with yellowish brown.

Falaya silt loam (0 to 2 percent slopes) (Fa).—This somewhat poorly drained soil has a surface layer of very dark grayish-brown to dark grayish-brown silt loam that extends to a depth of about 4 inches. The surface layer is underlain by 18 to 27 inches of brownish silt loam that is mottled with shades of brown and gray and which, in turn, is underlain by mottled gray and dark yellowish-brown silt loam. Included in mapping were areas of Collins soils that make up about 4 percent of the area mapped.

This soil is strongly acid, is medium to high in natural fertility, and has high available water capacity. Penetration into the soil by roots and water is easy, and tilth generally is good. This soil can be worked throughout a wide range of moisture content but it tends to crust and pack when bare. Although this soil is flooded during heavy rains, the floodwaters soon recede.

Most of this soil is in trees, but some areas are in pasture. Under good management that includes drainage, this soil is well suited to crops commonly grown in the county. It is also well suited to hardwoods and loblolly pine. Crops respond well to added lime and fertilizer. (Capability unit IIw–3; woodland group 8; woodland forage site 5)

Frost Series

The Frost series consists of poorly drained soils on small flats or in depressions throughout the county. Slopes range from 0 to 2 percent. These soils developed in silty material overlying heavy silty clay loam. The main layers of a typical profile are—

0 to 3 inches, dark-gray, friable silt loam.
3 to 20 inches, light brownish-gray, friable silt loam.
20 to 24 inches, gray, friable silt loam mottled with yellowish brown and yellowish red; thick, dark-gray and very dark gray clay films on faces of peds (soil aggregates).
24 to 30 inches, gray, firm silty clay loam mottled with yellowish brown and yellowish red; thick, dark-gray clay films on faces of peds.
30 to 50 inches, mixed dark-gray and gray light silty clay; firm when moist, plastic when wet; thick, dark-gray clay films on faces of peds.
50 to 54 inches, gray silty clay loam mottled with strong brown; firm when moist, plastic when wet; clay films on faces of peds.

Frost silt loam (0 to 2 percent slopes) (Fr).—This is a poorly drained soil that has a claypan. Dark grayish-brown to gray, gleyed silt loam extends from the surface to a depth of 20 to 24 inches. Below this depth is silty clay loam to light silty clay that is mottled with shades of gray, yellow, and brown. Included in mapping were areas of Brookhaven and Bude soils that make up 1 to 3 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has moderate available water capacity. The penetration of roots and water is restricted by the claypan and a fluctuating high water table.

This soil is well suited to hardwoods and is used mainly for them. Small areas have been cleared and are in pasture and crops. Crops respond well to lime and fertilizer. Adapted pasture grasses grow fairly well if fertilizer is applied liberally. Drainage is needed where cultivated crops are grown. (Capability unit IVw–1; woodland group 10; woodland forage site 4)

Guin Series

The Guin series consists of well-drained to excessively drained, gravelly soils. These soils are on slopes of 12 to 40 percent in small areas throughout the county. The main layers of a typical profile are—

0 to 5 inches, black, friable gravelly fine sandy loam; fine and medium gravel 40 percent by volume.
5 to 12 inches, very dark grayish-brown, friable gravelly sandy loam; fine and medium gravel 25 percent by volume.
12 to 24 inches, light yellowish-brown, loose gravelly sandy loam to gravel; fine to coarse gravel 85 percent by volume.
24 to 40 inches, very pale brown, loose gravelly sandy loam to gravel; fine to coarse gravel 85 percent by volume.
40 to 60 inches, yellowish-red bed of coarse gravel and sand; massive; firm in place, but loose when disturbed.

Guin gravelly fine sandy loam, 12 to 17 percent slopes (GgE).—This moderately steep soil is well drained to excessively drained. It has a black to very dark grayish-brown gravelly fine sandy loam surface layer 6 to 12 inches thick. The surface layer is underlain by yellowish-brown to yellowish-red gravelly sandy loam or beds of sand and gravel. Included in mapping were areas of Ruston and Lucy soils that make up 10 to 14 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has low available water capacity. Runoff is rapid.

Most of this soil is in trees, but some areas are used for pasture. Loblolly, shortleaf, and longleaf pines are suited. This soil is a good source of gravel for roads. (Capability unit VIIs–1; woodland group 17; woodland forage site 2)

Guin gravelly fine sandy loam, 17 to 40 percent slopes (GgF).—This steep or very steep, gravelly soil is well drained to excessively drained. The surface layer is black to very dark grayish-brown gravelly fine sandy loam 6 to 12 inches thick. It is underlain by yellowish-brown to yellowish-red gravelly sandy loam, loose gravel, or gravel in beds. Included in mapping were areas of Ruston and Lucy soils that make up 10 to 14 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has low available water capacity. Runoff is rapid.

Most of this soil is in trees, but some small areas are used for pasture. Loblolly, shortleaf, and longleaf pines are suited. This soil is a good source of gravel for roads. (Capability unit VIIs–1; woodland group 17; woodland forage site 2)

Gullied Land

Gullied land (Gu) consists of soils that are so severely eroded and gullied that they cannot be used as cropland without slow, expensive reclamation. The soils formed in

silty and sandy material. Erosion has been so severe that the surface layer, as well as much of the subsoil, has washed away. Coarse Coastal Plain material is exposed in places. Many of the gullies are so deep and wide that farm machines cannot cross them.

Runoff is rapid in some areas. Available water capacity is low.

All of this land has been used for field crops, but most areas are now in trees, and some areas are in pasture. Yields of pasture are low. (Capability unit VIIe–1; woodland group 19; woodland forage site 4)

Iuka Series

The Iuka series consists of moderately well drained soils that developed in loam and clay loam alluvium on flood plains. Slopes range from 0 to 2 percent. The main layers of a typical profile are—

0 to 8 inches, mixed very dark grayish-brown and black, very friable silt loam.
8 to 25 inches, mixed dark-brown and yellowish-brown, very friable loam.
25 to 31 inches, gray, very friable loam mottled with yellowish brown and pale brown.
31 to 46 inches, mottled gray, yellowish-brown, and pale-brown, very friable loam to light sandy clay loam.
46 to 54 inches, gray, very friable loam mottled with light olive brown.

In this county Iuka soils are mapped only in a complex with Ochlockonee soils.

Lucy Series

The Lucy series consists of well-drained to excessively drained soils that developed in loamy sand and sand. These soils are underlain by sandy clay loam at a depth of 20 to 30 inches. Slopes range from 17 to 40 percent. The main layers of a typical profile are—

0 to 2 inches, very dark grayish brown, loose loamy sand.
2 to 35 inches, yellowish-brown, loose loamy sand.
35 to 56 inches, red, friable sandy clay loam.

In Walthall County the Lucy soils are mapped only in a complex with Ruston soils.

Mantachie Series

The Mantachie series consists of somewhat poorly drained soils that developed in loamy alluvium on flood plains. Slopes range from 0 to 2 percent. The main layers of a typical profile are—

0 to 5 inches, mixed dark grayish-brown and grayish-brown, very friable loam.
5 to 12 inches, brown, very friable fine sandy loam mottled with gray.
12 to 24 inches, mottled gray, yellowish-brown, and dark yellowish-brown, very friable loam.
24 to 35 inches, strong-brown, very friable sandy loam mottled with gray.
35 to 50 inches, gray, very friable sandy loam mottled with yellowish brown.

Mantachie soils (0 to 2 percent slopes) (Ma).—These are somewhat poorly drained soils in alluvium. They have a surface layer that ranges from dark grayish brown to grayish brown in color and from loam or silt loam to fine sandy loam in texture. Underlying the surface layer are layers of fine sandy loam, loam, and sandy loam that are dominantly brownish, but one gleyed layer at a depth of 10 to 20 inches is dominantly gray. Included in mapping were areas of Iuka and Wehadkee soils that cover 5 to 10 percent of the area mapped.

These soils are strongly acid, are medium in natural fertility, and have moderate available water capacity. Roots and water easily penetrate the uppermost part of these soils, but the roots are restricted by the water table at a depth of 10 to 20 inches. These soils generally have good tilth, and they can be worked throughout a fairly wide range of moisture content. Flooding occurs during periods of heavy rains, but the floodwaters soon recede.

Trees and pasture are the main uses for these soils, but some areas are in row crops. Under good management, these soils are well suited to all locally grown crops. Response to added lime and fertilizer is good. Hardwoods and loblolly pine grow well. (Capability unit IIw–4; woodland group 12; woodland forage site 3)

Mashulaville Series

The Mashulaville series consists of poorly drained soils that have a fragipan. These soils developed in silty and loamy material on small flats or in depressions. Slopes range from 0 to 2 percent. The main layers of a typical profile are—

0 to 7 inches, very dark gray to grayish-brown, very friable silt loam.
7 to 19 inches, light brownish-gray, friable silt loam mottled with yellowish brown (fragipan).
19 to 28 inches, gray, firm, compact and brittle loam mottled with brownish yellow and light brownish gray (fragipan).
28 to 46 inches, mottled gray, strong-brown, and olive-yellow, firm, compact and brittle loam to sandy loam (fragipan).

Mashulaville silt loam (0 to 2 percent slopes) (Ms).—This poorly drained soil has a fragipan. The surface layer is very dark gray to grayish-brown silt loam 7 inches thick. Between depths of 7 and 19 inches is a gleyed fragipan consisting of light brownish-gray silt loam mottled with yellowish-brown. This layer is underlain by a mottled loam fragipan that has moderate structure and clay films on the peds. Below this layer the fragipan continues, but its texture is loam to sandy loam, and its color is mottled gray, brown, and olive yellow. Included in mapping were areas of Myatt and Stough soils that make up 2 to 5 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has low to medium available water capacity. The penetration of roots and water is restricted by the fragipan and a fluctuating high water table. Runoff is slow, and water stands on the surface during wet periods.

Most of this soil is in trees, but some areas are used for pasture. Drainage is needed before this soil is cleared and used for either pasture or row crops. Crops respond well to added lime and fertilizer. Hardwoods are well suited. (Capability unit IVw–2; woodland group 11; woodland forage site 3)

Myatt Series

The Myatt series consists of poorly drained, nearly level soils that developed in loamy material. The main layers of a typical profile are—

0 to 2 inches, dark grayish-brown, friable loam.
2 to 20 inches, light brownish-gray, friable loam.

20 to 46 inches, light brownish-gray, firm loam or heavy loam.
46 to 54 inches, gray, friable sandy loam mottled with yellowish brown.

Myatt loam (0 to 2 percent slopes) (Mt).—This poorly drained soil has a gray loam surface layer and a subsoil of mottled gray and yellow loam to sandy loam. Included in mapping were small areas that have a silt loam surface layer. Also included were areas of Stough and Mashulaville soils that cover 3 to 5 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has low to moderate available water capacity. Runoff is slow, and the rate of infiltration and percolation is slow to very slow. A fluctuating water table makes this soil wet in winter, and water stands on the surface during part of the year. In summer and fall the soil is generally so dry that the growth of plants is slowed.

The soil is used mainly for trees, but some areas are in pasture. Response to lime and fertilizer is fairly good. Most areas in pasture have been drained. Drainage is the main concern in management. (Capability unit IVw–3; woodland group 10; woodland forage site 3)

Ochlockonee Series

The Ochlockonee series consists of well-drained, acid soils that formed in loam and clay loam alluvium on nearly level flood plains. The main layers of a typical profile are—

0 to 4 inches, very dark grayish-brown, very friable loam to silt loam.
4 to 11 inches, very dark grayish-brown and pale-brown, very friable loam.
11 to 31 inches, dark yellowish-brown to strong-brown, very friable loam.
31 to 40 inches, yellowish-brown, very friable sandy loam mottled with dark yellowish brown and pale brown.
40 to 54 inches, mottled strong-brown, yellowish-brown, and light-gray, friable loam.

In this county Ochlockonee soils are mapped only in a complex with Iuka soils.

Ochlockonee-Iuka soils (0 to 2 percent slopes) (Oc).—These soils are so closely intermingled that it is not practical to show either one separately on a map of the scale used in this soil survey. The soils occur in narrow bands on the flood plains. They are acid and well drained to moderately well drained. Included in mapping were areas of Mantachie and Wehadkee soils that make up 5 to 10 percent of the area mapped.

The Ochlockonee soils are well drained and have a very dark grayish-brown loam, silt loam, or sandy loam surface layer. This layer is underlain by brown to strong-brown layers of loam, sandy loam, and in some places, light sandy clay loam.

The Iuka soils are moderately well drained and have a dark grayish-brown silt loam, loam, or sandy loam surface layer. The underlying layers are brown sandy loam, loam, and silt loam that are gleyed and mottled with gray at a depth of 17 to 27 inches.

Ochlockonee and Iuka soils are strongly acid and have medium natural fertility. They are easily penetrated by roots and water. Available water capacity is moderate. These soils generally have good tilth, and they can be worked throughout a wide range of moisture content.

Trees grow on most of the acreage; hardwoods are well suited. Some areas are used for crops and pasture and, under good management, produce favorable yields of locally grown crops. Crops respond well to lime and fertilizer. Flooding is frequent, however, and may damage crops early in spring. (Capability unit IIw–5; woodland group 13; woodland forage site 3)

Ora Series

The Ora series consists of moderately well drained to well drained soils that have a fragipan at a depth of 20 to 29 inches. These soils developed in loam and sandy clay loam material in nearly level to strongly sloping areas. Slopes range from 2 to 12 percent. The main layers of a typical profile are—

0 to 5 inches, dark grayish-brown, very friable loam.
5 to 25 inches, yellowish-red, friable light sandy clay loam.
25 to 31 inches, mottled yellowish-red, strong-brown, and light-gray, firm, compact and brittle loam to sandy loam (fragipan).
31 to 40 inches, red, firm, compact and brittle sandy loam mottled with yellowish brown and light gray (fragipan).
40 to 60 inches, red, loose heavy sandy loam mottled with yellowish brown and white.

Ora loam, 2 to 5 percent slopes (OrB).—This is a moderately well drained to well drained soil that has a black to very dark grayish-brown loam surface layer 6 to 10 inches thick. The subsoil is strong-brown loam to sandy clay loam. At a depth of about 22 inches is a weak fragipan consisting of mottled yellow, brown, red, and gray loam to sandy loam. Included in mapping were areas that have a silt loam surface layer and that make up about 50 percent of the area mapped. Also included were areas of Ruston soils and Savannah soils that make up 10 to 14 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the subsoil, but not the fragipan. This soil generally has good tilth. It can be worked throughout a wide range of moisture content. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

This soil is mainly in stands of mixed hardwoods and pines. Some areas are used for pasture and row crops and, under good management, produce favorable yields. Crops respond well to added lime and fertilizer. Well-suited trees are loblolly, longleaf, and shortleaf pines. (Capability unit IIe–2; woodland group 6; woodland forage site 1)

Ora loam, 2 to 5 percent slopes, eroded (OrB2).—This soil is moderately well drained to well drained and commonly has a very dark grayish-brown to dark grayish-brown loam surface layer 4 to 6 inches thick. The subsoil is exposed in a few eroded spots, and rills and a few shallow gullies are common in some areas. The upper part of the subsoil is yellowish-red to strong-brown sandy clay loam to a depth of 18 to 29 inches. Below that depth is a weak fragipan consisting of mottled red, yellow, brown, and gray loam to sandy loam. This fragipan extends to a depth of 40 inches and is underlain by red to yellowish-red sandy loam. Included in mapping were areas of Ruston and Savannah soils that make up 5 to 12 percent of the area mapped. Also included were areas of an Ora soil that has a silt loam surface layer and covers approximately 40 percent of the area mapped.

Acidity is strong, natural fertility is medium, and available water capacity is moderate. Roots and water easily

penetrate the upper subsoil, but not the fragipan. This soil generally has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

This soil is used mainly for row crops and pasture (fig. 9), but some areas have been planted to pines. Loblolly, longleaf, and shortleaf pines are well suited. Under good management, this soil is well suited to the crops commonly grown in the county. Crops respond well to added lime and fertilizer. (Capability unit IIe–2; woodland group 6; woodland forage site 1)

Ora loam, 2 to 5 percent slopes, severely eroded (OrB3).—This is a moderately well drained soil that has a weak fragipan. The surface layer is pale-brown or yellowish-red to strong-brown loam that is a mixture of the original surface soil and material from the subsoil. The upper part of the subsoil is yellowish-red to brown silty clay loam to clay loam. In most areas subsoil material is exposed between patches of the original dark grayish-brown surface soil. Some rills and shallow gullies and a few deep gullies have formed. At a depth of about 20 inches is a fragipan that extends to a depth of 50 inches. It is mottled strong brown, yellowish red, and gray. Included in mapping were areas of Ruston soils and Savannah soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is low to medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the upper subsoil, but not the fragipan. This soil generally has fair tilth, and it can be worked throughout a fairly wide range of moisture content. Runoff is rapid in cultivated areas.

All of this soil was cultivated at one time, but now most of it is in pasture or pine trees, and some is idle. Under good management, this soil is suited to all locally grown crops. Crops respond well to added lime and fertilizer. Well-suited trees are loblolly, shortleaf, and longleaf pines. (Capability unit IIIe–2; woodland group 6; woodland forage site 1)

Ora loam, 5 to 8 percent slopes, eroded (OrC2).—This moderately well drained soil generally has a grayish-brown to brown, friable loam surface layer 3 to 5 inches thick. In a few of the more severely eroded spots, subsoil material is exposed and some rills and a few shallow gullies have formed. Some smaller areas are not eroded. The upper part of the subsoil is yellowish-red loam, clay loam, or sandy clay loam to a depth of 24 to 30 inches. Below that depth is a weak fragipan extending to a depth of 57 inches. This fragipan consists of mottled brown, strong-brown, yellowish-red, and gray loam to sandy loam. Included in mapping were areas of Ruston and Savannah soils that cover 5 to 10 percent of the area mapped. Also included, and covering nearly 50 percent, is an Ora soil that has a silt loam surface layer.

This soil is strongly acid, is medium in natural fertility,

Figure 9.—**Coastal bermudagrass pasture on Ora loam, 2 to 5 percent slopes, eroded.**

and has moderate available water capacity. Roots and water easily penetrate the upper subsoil, but not the fragipan. This soil has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is moderate to high, and erosion is a moderate to severe hazard in cultivated areas.

Most of this soil is used for pasture and row crops, but some areas have been planted to pines. Also, pines have reproduced naturally (fig. 10). Loblolly, shortleaf, and longleaf pines are well suited. Under good management, this soil is well suited to all locally grown crops. Crops respond well to additions of lime and fertilizer. (Capability unit IIIe–1; woodland group 6; woodland forage site 1)

Ora loam, 5 to 8 percent slopes, severely eroded (OrC3).—This moderately well drained soil has a pale-brown to strong-brown, friable loam surface layer that is a mixture of the original surface layer and material from the subsoil. In most areas subsoil material is exposed between a few patches consisting of the original dark grayish brown surface layer. In some areas rills, shallow gullies, and a few deep gullies have formed. The subsoil is strong-brown to yellowish-red light sandy clay loam, clay loam, or loam to a depth of 20 to 26 inches. Below this depth is a fragipan consisting of mottled yellowish-brown, strong brown, gray, and yellowish-red sandy loam. Included in mapping were areas of Ruston and Savannah soils that make up 5 to 10 percent of the area mapped.

Figure 10.—**A stand of pines on Ora loam, 5 to 8 percent slopes, eroded, that have reproduced naturally.**

This soil is strongly acid, is low to medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the upper subsoil, but not the fragipan. This soil generally has fair tilth. It can be worked throughout a fairly wide range of moisture content, but it tends to clod and pack where the surface layer is entirely subsoil material. Runoff is rapid, and the erosion hazard is severe in cultivated areas.

All of this soil has been cultivated, but it is now used mainly for pasture and pine trees. Well-suited pines are loblolly, shortleaf, and longleaf. Under good management, this soil is suited to all locally grown crops. Response to added lime and fertilizer is good. (Capability unit IVe–2; woodland group 6; woodland forage site 1)

Ora loam, 8 to 12 percent slopes, eroded (OrD2).—This is a moderately well drained soil that has a dark grayish-brown to brown, friable loam surface layer 4 to 6 inches thick. Rills and a few shallow gullies are common in some areas. The upper subsoil is strong-brown to yellowish-brown loam, sandy clay loam, or clay loam that extends to a depth of 26 to 32 inches and is underlain by a fragipan. The fragipan consists of mottled yellowish-brown, yellowish-red, and gray sandy loam to sandy clay loam. It extends to a depth of 55 inches. Included in mapping were areas of Ruston soils covering 10 percent of the area mapped. Covering 50 percent of the area mapped were areas of an Ora soil that have a silt loam surface layer.

This soil is strongly acid, is low to medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the surface layer and the upper subsoil, but not the fragipan. This soil generally has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is moderate to high, and the hazard of erosion is moderate to severe in cultivated areas.

This soil is used mainly for pasture and row crops, but a small part is in row crops. Well-suited pines are loblolly, shortleaf, and longleaf. Under good management, this soil is suited to all locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IVe–1; woodland group 6; woodland forage site 2)

Pheba Series

The Pheba series consists of somewhat poorly drained soils that have a fragipan at a depth of 15 to 20 inches. These soils developed in silt loam and the underlying loam material. They are in small nearly level to gently sloping areas where slopes range from 0 to 5 percent. The main layers of a typical profile are—

0 to 7 inches, very dark grayish-brown, friable silt loam.
7 to 11 inches, pale-brown, friable silt loam mottled with brownish yellow.
11 to 16 inches, yellowish-brown, friable silt loam mottled with light brownish gray and brownish yellow.
16 to 38 inches, mottled yellowish-brown, light-gray, pale-brown, and brownish-yellow, slightly firm, compact and brittle loam (fragipan).
38 to 50 inches, yellowish-brown, friable loam to sandy loam mottled with light gray.

Pheba silt loam, 0 to 5 percent slopes (PhB).—This nearly level to gently sloping, somewhat poorly drained soil has a fragipan. The surface layer is very dark gray to dark grayish-brown silt loam 6 to 8 inches thick. The upper part of the subsoil consists of yellowish-brown to

brownish-yellow silt loam or loam that has few to many mottles and extends to a depth of 15 to 18 inches. Below that depth is the fragipan. It consists of mottled brown, yellow, and gray loam. Included in mapping were areas of Ora and Savannah soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the surface layer and the upper subsoil, but not the fragipan. The content of organic matter is low. Runoff is slow to moderate, and the hazard of erosion is generally slight in cultivated areas.

Pines and mixed hardwoods grow in most areas, but some areas are used for pasture and row crops. Well-suited pines are loblolly, shortleaf, and longleaf. Under good management, this soil is suited to the locally grown crops. Crops respond fairly well to added lime and fertilizer. (Capability unit IIIw–2; woodland group 15; woodland forage site 1)

Prentiss Series

The Prentiss series consists of moderately well drained soils on stream terraces that are broad and flat or gently sloping. These soils have a fragipan at a depth of 19 to 24 inches. They developed in fine sandy loam material. Slopes range from 0 to 5 percent. The main layers of a typical profile are—

0 to 3 inches, very dark grayish-brown, very friable fine sandy loam.
3 to 7 inches, dark grayish-brown, very friable fine sandy loam.
7 to 20 inches, mixed yellowish-brown and dark grayish-brown, very friable fine sandy loam to loam.
20 to 23 inches, yellowish-brown, friable heavy sandy loam.
23 to 40 inches, mottled yellowish-brown, light-gray, brownish-yellow, and strong-brown, slightly firm, compact and brittle fine sandy loam (fragipan).
40 to 54 inches, mottled very pale brown, yellowish-brown, light-gray, and brownish-yellow, very friable loamy sand to sand.

Prentiss fine sandy loam, 0 to 2 percent slopes (PrA).—This is a moderately well drained soil that has a surface layer of very dark grayish-brown to dark-brown fine sandy loam to silt loam. The upper subsoil is strong-brown to yellowish-brown loam, sandy loam, or fine sandy loam. Included in mapping were areas of Cahaba and Stough soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the surface layer and the upper subsoil, but not the fragipan. The content of organic matter is low, but tilth is generally good. This soil can be worked throughout a wide range of moisture content. Runoff is slow to moderate, and erosion generally is only a slight hazard in cultivated areas.

Most of this soil is in trees and pasture, but some areas are used for row crops. Well-suited pines are loblolly, shortleaf, and longleaf. Under good management, this soil is suited to all locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IIw–7; woodland group 6; woodland forage site 1)

Prentiss fine sandy loam, 2 to 5 percent slopes (PrB).—This moderately well drained soil has a very dark grayish-brown to dark-brown fine sandy loam to loam surface layer. The upper subsoil is yellowish-brown loam. Included in mapping were areas of Cahaba and Stough soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the surface layer and the upper subsoil, but not the fragipan. The content of organic matter is low. This soil generally has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is moderate, and the hazard of erosion is slight to moderate in cultivated areas.

The soil is used mainly for pasture and trees, but row crops are grown in some areas. Well-suited trees are loblolly, shortleaf, and longleaf pines. Under good management, this soil is suited to all locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IIe 2; woodland group 6; woodland forage site 1)

Providence Series

The Providence series consists of moderately well drained soils that have a fragipan at a depth of 18 to 30 inches. These soils are on narrow to broad ridges in gently sloping to moderately sloping areas. They developed in a thin mantle of silty material and the underlying loamy material. Slopes range from 2 to 8 percent. The main layers of a typical profile are—

0 to 4 inches, dark-brown, friable silt loam.
4 to 8 inches, mixed strong-brown, dark grayish-brown, and dark brown, friable silt loam.
8 to 15 inches, mixed dark-brown and strong-brown, friable light silty clay loam.
15 to 19 inches, strong-brown, friable silty clay loam mottled with pale brown.
19 to 36 inches, mottled strong-brown, yellowish-brown, brown, light-gray, and very pale brown, firm, slightly compact and brittle silt loam (fragipan).
36 to 40 inches, mottled yellowish-red, light-gray, and brownish-yellow, firm, compact and brittle loam (fragipan).
40 to 60 inches, mottled red, brownish-yellow, and light-gray, firm, compact and brittle sandy clay loam (fragipan).

Providence silt loam, 2 to 5 percent slopes, eroded (PvB2).—This moderately well drained soil has a fragipan. The surface layer is dark-brown silt loam 4 to 6 inches thick. In a few eroded spots the subsoil is exposed. The upper part of the subsoil is strong-brown and yellowish-red to dark-brown heavy silt loam to silty clay loam. Patchy clay films are on the peds of this material. A fragipan occurs at a depth of 19 to 24 inches. It is silt loam mottled with shades of gray, brown, and yellow in the upper part and sandy clay loam or loam mottled with shades of red, brown, yellow, and gray in the lower part. Included in mapping were areas of Brookhaven soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the surface layer and the upper subsoil, but not the fragipan. This soil generally has good tilth. It can be worked throughout a wide range of moisture content, but it tends to crust and pack when bare. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

This soil is used mainly for pasture and row crops, but some small areas are in trees. Well-suited trees are loblolly, longleaf, and slash pines. Under good management, this soil is well suited to all locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IIe–3; woodland group 5; woodland forage site 4)

Providence silt loam, 5 to 8 percent slopes, eroded (PvC2).—This moderately well drained soil has a fragipan. The surface layer is very dark grayish-brown silt loam 4 to 6 inches thick. In a few eroded spots the subsoil is exposed. The upper part of the subsoil extends to a depth of 19 to 29 inches and consists of strong-brown to yellowish-brown light silty clay loam to heavy silt loam. It is underlain by a fragipan that is mottled with shades of brown, yellow, and gray. The underlying layers are red, brown, yellow, and gray sandy clay loam. Included in mapping were areas of Ora and Ruston soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is medium in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the upper subsoil, but not the fragipan. This soil has good tilth. It can be worked throughout a wide range of moisture content, but it tends to crust and pack when bare. Runoff is moderate, and the hazard of erosion is moderate in cultivated areas.

Most of this soil is used for pasture, but some small areas are in trees and row crops. Well-suited trees are loblolly, longleaf, and shortleaf pines. Under good management, this soil produces adequate yields of locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IIIe 3; woodland group 5; woodland forage site 4)

Rumford Series

The Rumford series consists of well-drained to excessively drained, acid soils. These soils developed in sandy loam, loam, and sandy clay loam material. Slopes range from 0 to 2 percent. The main layers of a typical profile are—

0 to 6 inches, very dark grayish-brown, very friable fine sandy loam.
6 to 10 inches, yellowish-brown, very friable fine sandy loam.
10 to 24 inches, strong-brown, very friable sandy loam.
24 to 50 inches, very pale brown, loose loamy sand.

Rumford fine sandy loam, 0 to 2 percent slopes (RfA).—This nearly level soil is well drained to excessively drained. It has a thin, very dark grayish-brown to dark-brown fine sandy loam surface layer. Its subsoil is yellowish-brown or strong-brown to yellowish-red sandy loam or fine sandy loam that extends to a depth of about 24 inches and is underlain by loamy sand or sandy loam. Included in mapping were areas of Cahaba and Prentiss soils that make up from 5 to 10 percent of the area mapped. Also included were areas of a Rumford soil that has a loamy sand surface layer.

This soil is strongly acid, is low in natural fertility, and has low available water capacity. Roots and water easily penetrate the subsoil, and tilth is generally good. This soil can be worked throughout a wide range of moisture content, but it is generally droughty because available water capacity is low.

This soil is used mainly for pasture and row crops, but a small acreage is in trees. Well-suited trees are loblolly and slash pines. Under good management, this soil is well suited to grasses that make most of their growth early in spring and to grasses tolerant to wetness. Crops respond well to added lime and fertilizer. (Capability unit IIs–1; woodland group 1; woodland forage site 1)

Ruston Series

The Ruston series consists of well-drained, nearly level to very steep soils. Slopes range from 0 to 40 percent. These soils developed in sandy clay loam material. The main layers of a typical profile are—

0 to 5 inches, very dark grayish-brown, very friable fine sandy loam.
5 to 12 inches, yellowish-red, very friable fine sandy loam to loam.
12 to 28 inches, yellowish-red, friable sandy clay loam.
28 to 43 inches, yellowish-red, very friable sandy loam mottled with light yellowish brown.
43 to 60 inches, red, friable sandy clay loam.

Ruston fine sandy loam, 0 to 2 percent slopes (RuA).—This soil is well drained and has a brown to dark grayish-brown fine sandy loam surface layer 6 to 12 inches thick. The subsoil is yellowish-red to red sandy clay loam in the upper part and yellowish-brown to light yellowish-brown sandy loam in the lower part. Included in mapping were small areas of Cahaba soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. Roots and water easily penetrate the soil. Tilth is generally good, and this soil can be worked throughout a wide range of moisture content. Runoff is moderate to slow, and the hazard of erosion is slight in cultivated areas.

Most of this soil is in row crops and pasture, but small areas are planted to pines. Well-suited pines are loblolly, longleaf, and shortleaf, and mixed hardwoods also grow well. Under good management, this soil is well suited to the crops commonly grown in the county. Crops respond well to added lime and fertilizer. (Capability unit I–1; woodland group 1; woodland forage site 1)

Ruston fine sandy loam, 2 to 5 percent slopes (RuB).—This well-drained soil has a very dark grayish-brown or dark grayish-brown fine sandy loam surface layer 6 to 12 inches thick. The subsoil is yellowish-red sandy clay loam to clay loam in the upper part and is yellowish-red sandy loam in the lower part. Included in mapping were areas of Ora and Cahaba soils that make up 5 to 10 percent of the area mapped. Also included were areas of a Ruston soil that has a gravelly sandy loam surface layer.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water, and it can be worked throughout a wide range of moisture content. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

The main uses are for row crops and pasture, but some areas are in pines and mixed hardwoods. Longleaf pine, loblolly pine, and mixed hardwoods grow well. Under good management, this soil is well suited to locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IIe–1; woodland group 1; woodland forage site 1)

Ruston fine sandy loam, 2 to 5 percent slopes, eroded (RuB2).—This soil is well drained and has a dark grayish-brown to dark-brown fine sandy loam surface layer 5 to 7 inches thick. The surface layer is underlain by yellowish-red to red sandy clay loam 12 to 30 inches thick. Included in mapping were areas of Ora soils that make up 5 to 10 percent of the area mapped. Also included were small areas of a Ruston soil that has a gravelly sandy loam surface layer.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water, and it can be worked throughout a wide range of moisture content. Tilth is generally good. Runoff is moderate to slow, and erosion is a moderate hazard in cultivated areas.

This soil is used mainly for pasture and row crops. It is well suited to all locally grown crops if management is good. Crops respond well to added fertilizer and lime. Some areas are planted to pines. Loblolly, longleaf, and slash pines and mixed hardwoods are well suited. (Capability unit IIe–1; woodland group 1; woodland forage site 1)

Ruston fine sandy loam, 5 to 8 percent slopes, eroded (RuC2).—This well-drained soil has a very dark grayish-brown to dark grayish-brown fine sandy loam surface layer 4 to 6 inches thick. In a few uneroded areas the surface layer is 6 to 8 inches thick. The subsoil is yellowish-red to red sandy clay loam in the upper part and yellowish-red sandy loam in the lower part. Included in mapping were areas of Ora and Saffell soils that make up 5 to 10 percent of the area mapped. Also included were small areas of a Ruston soil that has a gravelly sandy loam surface layer.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water. This soil generally has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is moderate, and erosion is a moderate to severe hazard in cultivated areas.

This soil is used mainly for pasture and row crops, but pines have been planted in some areas. Areas that have not been cleared are in longleaf pine, loblolly pine, and mixed hardwoods. Longleaf, loblolly, and slash pines and mixed hardwoods are well suited. Under good management, this soil is well suited to locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IIIe–4; woodland group 1; woodland forage site 1)

Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded (RuC3).—This well-drained soil has a yellowish-brown to dark grayish-brown fine sandy loam surface layer 2 to 5 inches thick. The surface layer is a mixture of the original surface layer and material from the subsoil. In most areas the subsoil is exposed, but there are a few patches of the original grayish-brown surface soil. Rills, shallow gullies, and a few deep gullies have formed in some areas. The subsoil is yellowish-red sandy clay loam to a depth of 30 to 47 inches and, below that depth, is yellowish-red to red sandy loam. Included in mapping were areas of Ora soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water. Tilth is generally poor to fair, and clodding, crusting, and packing are likely where the subsoil is exposed. Runoff is rapid, and erosion is a severe hazard in cultivated areas.

This soil is used mainly for trees or is idle, but a small acreage is range. Pasture is fairly well suited, and trees, especially loblolly, slash, and longleaf pines, are well suited (fig. 11). Row crops can be grown if the crop residue is returned to the soil. Crops respond well to added lime and fertilizer. (Capability unit IVe–4; woodland group 1; woodland forage site 1)

Ruston fine sandy loam, 8 to 12 percent slopes, eroded (RuD2).—This well-drained soil has a brown to grayish-brown fine sandy loam surface layer that ranges from 4 to 8 inches in thickness and is 4 to 6 inches thick in two-thirds of the area mapped. The subsoil is yellowish-red sandy clay loam to a depth of 30 to 36 inches and, below that depth, is yellowish-red sandy loam. Included in mapping were areas of Ora, Saffell, and Shubuta soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water. It generally has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is moderate to rapid, and erosion is a severe hazard in cultivated areas.

This soil is used mostly for pasture and trees, but a small acreage is in row crops. Well-suited trees are loblolly, longleaf, and slash pines. Under good management, this soil is fairly well suited to all crops commonly grown in the county. Crops respond fairly well to added lime and fertilizer. (Capability unit IVe–3; woodland group 1; woodland forage site 2)

Ruston fine sandy loam, 12 to 17 percent slopes, eroded (RuE2).—This well-drained soil has a surface layer of dark-brown to brown fine sandy loam that is generally 4 to 6 inches thick, but about half of the area mapped is uneroded and has a surface layer 6 to 8 inches thick. The subsoil is yellowish red to red sandy clay loam in the upper part and is red to strong-brown sandy loam in the lower part. Included in mapping were areas of Shubuta, Guin, and Lucy soils that make up 10 to 12 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water. Runoff is moderate to rapid, and erosion is a severe hazard in cultivated areas.

The main uses are for pasture and trees, but a small area is in row crops. Under good management, this soil is suited to adapted pasture grasses and close growing hay crops. Crops respond well to added lime and fertilizer. Loblolly, longleaf, and shortleaf pines and mixed hardwoods grow well. (Capability unit VIe–1; woodland group 3; woodland forage site 2)

Ruston fine sandy loam, 8 to 17 percent slopes, severely eroded (RuD3).—This soil is strongly sloping in about half of the area mapped. It is well drained and has a yellowish-red to yellowish-brown fine sandy loam surface layer that is 3 to 5 inches thick and consists of a mixture of material from the subsoil and the original surface layer. Rills, shallow gullies, and a few deep gullies have formed in some areas. The subsoil is yellowish-red to red sandy clay loam to a depth of 30 to 40 inches and, below that depth, is yellowish-red to red sandy loam. Included in mapping were areas of Shubuta and Guin soils that cover 5 to 10 percent of the area mapped.

This soil is strongly acid and low in natural fertility. It is easily penetrated by roots and water. It generally has poor to fair tilth and tends to clod, crust, and pack where the subsoil is exposed. Runoff is rapid, and erosion is a severe hazard in cultivated areas.

All of this soil has been cultivated. It is now used mainly for pine trees and is well suited to that use. Suit-

Figure 11.—**Loblolly pine that has reproduced naturally on Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded.**

able trees are loblolly, longleaf, and shortleaf pines. Pasture is only fairly well suited. (Capability unit VIIe–2; woodland group 2; woodland forage site 2)

Ruston fine sandy loam, 17 to 40 percent slopes (RuF).—This well-drained soil has a very dark gray to grayish-brown fine sandy loam surface layer 6 to 12 inches thick. The subsoil is yellowish-red to red sandy clay loam to a depth of 30 to 44 inches and, below that depth, is yellowish-red to red sandy loam. Included in mapping were areas of Lucy and Guin soils that make up 10 to 12 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water. Runoff is rapid, and erosion is a severe hazard in cultivated areas.

This soil is used mainly for trees and pasture. Under good management, it is fairly well suited to adapted pasture grasses. Response to added lime and fertilizer is good. (Capability unit VIIe–3; woodland group 3; woodland forage site 2)

Ruston fine sandy loam, 17 to 40 percent slopes, eroded (RuF2).—This well-drained soil has a very dark grayish-brown to brown fine sandy loam surface layer 4 to 6 inches thick. The upper part of the subsoil is red to yellowish-red sandy clay loam to clay loam to a depth of 30 to 50 inches and is underlain by red to yellowish-red sandy loam. In places small amounts of gravel are in some or all layers of this soil. Rills, shallow gullies, and a few deep gullies have formed in some areas.

This soil is strongly acid, is low in natural fertility, and has moderate available water capacity. It is easily penetrated by roots and water. It generally has good tilth, and it can be worked throughout a wide range of moisture content. Runoff is rapid, and erosion is a severe hazard in cultivated areas.

Most of this soil is in trees, but a small acreage is in

pasture. Loblolly, longleaf, and shortleaf pines are well adapted. Under good management, pasture grasses are fairly well suited. (Capability unit VIIe–3; woodland group 3; woodland forage site 2)

Ruston-Lucy complex, 17 to 40 percent slopes (RlF).—This complex is in the southeastern part of the county where Ruston and Lucy soils occur together in such an irregular pattern that it is not practical to show them separately at the scale of mapping used in this soil survey. These soils are strongly acid.

The Ruston soil accounts for 60 percent of this complex, and the Lucy soil accounts for 35 percent. The remaining 5 percent consists of excessively drained loamy sand and gravelly soils. The areas mapped contain both Ruston and Lucy soils, but in varying proportions.

The Ruston soil is well drained and has a black to very dark grayish-brown fine sandy loam surface layer 6 to 16 inches thick. The surface layer is underlain by yellowish-red sandy clay loam 24 to 30 inches thick. Available water capacity is moderate, and natural fertility is low to moderate. Water and roots easily penetrate the Ruston soil.

The Lucy soil is well drained to excessively drained. It has a very dark grayish-brown loamy sand surface layer that is 18 to 30 inches thick and is underlain by yellowish-red to red sandy clay loam. Natural fertility and available water capacity are low.

The Ruston and Lucy soils are used mainly as woodland. Loblolly, longleaf, and shortleaf pines are well adapted. Erosion is a slight hazard. (Capability unit VIIe–3; woodland group 4; woodland forage site 2)

Saffell Series

The Saffell series consists of well-drained to excessively drained, gently sloping to strongly sloping, gravelly soils. Slopes range from 2 to 12 percent. These soils developed in sandy loam, gravelly fine sandy loam, gravelly sandy loam, and gravelly sandy clay loam. The main layers of a typical profile are—

0 to 5 inches, dark grayish-brown, friable gravelly fine sandy loam; 10 to 15 percent gravel.
5 to 11 inches, strong-brown, friable gravelly sandy loam mottled with dark grayish brown; 15 to 20 percent gravel.
11 to 21 inches, yellowish-red, friable gravelly sandy clay loam; 20 to 30 percent gravel.
21 to 27 inches, strong-brown, friable gravelly sandy loam mottled with white; 30 to 50 percent gravel.
27 to 56 inches, yellowish-red, very friable gravelly loamy sand to gravelly sandy loam; 60 to 75 percent gravel.

Saffell gravelly fine sandy loam, 2 to 8 percent slopes, eroded (SaC2).—This soil is gently sloping in about half of the area mapped. It is well drained to excessively drained and has a dark grayish-brown gravelly fine sandy loam surface layer 4 to 6 inches thick. In a few more severely eroded spots the subsoil is exposed. Rills and gullies are common in some places. The subsoil is yellowish-red gravelly sandy clay loam to a depth of 20 to 34 inches and, below that depth, is strong-brown to yellowish-red gravelly sandy loam or gravelly sandy clay loam. Underlying the subsoil is gravelly sandy loam or gravelly loamy sand. Included in mapping were areas of Ruston and Ora soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has low to moderate available water capacity. It is easily penetrated by roots and water. Tilth is generally good, but the gravel is abrasive and wears out farm implements. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

This soil is used mainly for pasture and trees, but a few areas are in row crops. All locally grown crops can be grown if management is good. Crops respond well to added lime and fertilizer. (Capability unit IIIe–5; woodland group 1; woodland forage site 1)

Saffell gravelly fine sandy loam, 8 to 12 percent slopes, eroded (SaD2).—This well-drained to excessively drained, gravelly soil has a very dark grayish-brown gravelly fine sandy loam surface layer 4 to 6 inches thick. The subsoil is yellowish-red gravelly sandy clay loam or gravelly sandy loam in the upper part and yellowish-red gravelly sandy loam to gravelly loamy sand in the lower part. Included in mapping were areas of Ruston soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has low to moderate available water capacity. It is easily penetrated by roots and water. Tilth is generally good, but the gravel is abrasive and wears out farm implements. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

This soil is used mainly for trees and pasture. Well-suited trees are loblolly, shortleaf, and longleaf pines. Crops are fairly well suited if management is good, and they are grown in a small acreage. (Capability unit IVe–5; woodland group 1; woodland forage site 2)

Sandy Alluvial Land

Sandy alluvial land (0 to 2 percent slopes) (Sd) consists of excessively drained alluvium on the flood plains. It generally has a very pale-brown to brown sand to loamy sand surface layer 5 to 30 inches thick. In some places the surface layer is loam or silt loam. The underlying layers generally consist of stratified loamy sand, sand, and loam. Included in mapping were areas of Bruno soils that make up 3 to 5 percent of the area mapped.

This land type is strongly acid and low in fertility. It is generally droughty but is subject to occasional flooding.

Willow, cottonwood, and similar trees are well suited. (Capability unit Vw–1; woodland group 18; woodland forage site 3)

Savannah Series

The Savannah series consists of moderately well drained soils that have a fragipan at a depth of 18 to 27 inches. These soils are in nearly level to sloping areas. They developed in silt loam that has a high content of sand, sandy loam, and loam. Slopes range from 0 to 8 percent. The main layers of a typical profile are—

0 to 7 inches, mixed very dark gray and very dark grayish-brown, very friable silt loam (high sand content).
7 to 11 inches, mixed yellowish-brown, brown, and dark grayish-brown, friable silt loam.
11 to 23 inches, yellowish-brown, friable loam.
23 to 31 inches, mottled yellowish-brown, light-gray, and dark-brown, firm, compact and brittle loam (fragipan).
31 to 53 inches, mottled yellowish-brown, light-gray, dark-brown, and yellowish-red, firm, compact and brittle loam (fragipan).

53 to 65 inches, mottled red, yellowish-red, light-gray, and yellowish-brown, firm, compact and brittle sandy clay loam (fragipan).

Savannah silt loam, 0 to 2 percent slopes (ShA).—This moderately well drained soil has a fragipan. The surface layer is very dark gray silt loam 5 to 8 inches thick. The upper subsoil of yellowish-brown loam or silt loam to clay loam is underlain by a fragipan at a depth of 20 to 27 inches. The fragipan consists of firm, compact, and brittle loam that is mottled with shades of yellow, gray, brown, and red. Included in mapping were areas of Pheba and Ruston soils that make up 3 to 5 percent of the area mapped.

This soil is strongly acid, is low to moderate in natural fertility, and has moderate to low available water capacity. Roots and water easily penetrate the upper subsoil, but not the fragipan. This soil has fairly good tilth, and it can be worked throughout a fairly wide range of moisture content. Runoff is slow, and erosion is generally slight in cultivated areas.

Most of this soil is in mixed stands of hardwoods, loblolly pine, and longleaf pine, but some of the smaller areas are used for pasture and crops. Loblolly and longleaf pines are well suited. Under good management, this soil is well suited to all locally grown crops. Crops respond well to added lime and fertilizer. Drainage is needed in some areas. (Capability unit IIw–7; woodland group 6; woodland forage site 1)

Savannah silt loam, 2 to 5 percent slopes, eroded (ShB2).—This moderately well drained soil has a fragipan. The surface layer is very dark gray silt loam that has a high content of sand and is 4 to 6 inches thick. The upper subsoil is yellowish-brown and strong-brown heavy silt loam or heavy loam. It is underlain by a mottled yellow, brown, and gray fragipan at a depth of 18 to 21 inches. Included in mapping were areas that are only slightly eroded and make up approximately 50 percent of the area mapped. Also included were areas of Ora soils that make up 3 to 5 percent.

This soil is strongly acid, is low to moderate in natural fertility, and has moderate to low available water capacity. Roots and water easily penetrate the upper subsoil, but not the fragipan. This soil has fairly good tilth, and it can be worked throughout a fairly wide range of moisture content. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

This soil is used mainly for row crops and pasture, but some areas are still in mixed stands of hardwoods, loblolly pine, and longleaf pine. These pines are well suited. Under good management, this soil produces adequate yields of locally grown crops. Crops respond well to added lime and fertilizer. (Capability unit IIe–2; woodland group 6; woodland forage site 1)

Savannah silt loam, 5 to 8 percent slopes, eroded (SnC2).—This moderately well drained soil is on uplands and has a fragipan. The surface layer consists of 5 to 6 inches of very dark grayish-brown to brown or pale-brown silt loam that has a high content of sand. The upper subsoil is yellowish-brown loam to clay loam and is underlain by the fragipan at a depth of 19 to 27 inches. The fragipan is loam mottled with shades of yellow, brown, and gray in the upper part. In the lower part it is sandy loam, loam, or clay loam mottled with shades of red, yellow, brown, and gray. Included in mapping were areas of Ora soils that make up 5 to 10 percent of the area mapped.

This soil is strongly acid and has low to moderate natural fertility. Available water capacity is moderate to low. Roots and water easily penetrate the upper subsoil, but not the fragipan. This soil has fairly good tilth, and it can be worked throughout a fairly wide range of moisture content. Runoff is moderate to rapid, and erosion is a moderate to severe hazard in cultivated areas.

This soil is used mostly for row crops and pasture, but some areas are still in mixed stands of hardwoods and loblolly and longleaf pines. Some areas have been planted to slash and loblolly pines. Under good management, this soil produces adequate yields of all locally grown crops. Crops respond well to added lime and fertilizer. Loblolly and longleaf pines are well suited. (Capability unit IIIe–1; woodland group 6; woodland forage site 1)

Shubuta Series

The Shubuta series consists of moderately well drained and well drained soils that have a fine sandy loam surface layer and a silty clay loam subsoil. These soils are adjacent to the heads of streams on moderate to steep slopes. The main layers of a typical profile are—

0 to 5 inches, dark grayish-brown, friable fine sandy loam.
5 to 22 inches, yellowish-red, friable silty clay loam mottled with reddish yellow and brownish yellow.
22 to 60 inches, mottled red, yellowish-brown, and light-gray, firm clay loam.

In Walthall County the Shubuta soils are mapped only in undifferentiated soil groups with Boswell soils.

Shubuta and Boswell soils, 5 to 8 percent slopes, eroded (StC2).—These are moderately sloping, moderately well drained and well drained soils. They occur in bands so narrow and so intermingled that it is not practical to show them separately on a map of the scale used. The areas where these soils are mapped together are no larger than surrounding areas consisting of a single soil.

The Shubuta soil makes up 70 percent of this mapping unit, and the Boswell soil makes up 25 percent. The remaining 5 percent consists of Ora, Ruston, and Savannah soils. All areas contain both Shubuta and Boswell soils, but each in varying amounts.

The Shubuta soil is moderately well drained and well drained and has a dark grayish-brown fine sandy loam surface layer 3 to 5 inches thick. The subsoil is yellowish-red silty clay loam to clay loam. At a depth of 32 to 60 inches is mottled red, yellowish-red, light-gray, and brownish-yellow clay loam stratified with lenses of sand.

The Boswell soil is moderately well drained. It has a very pale brown to very dark gray sandy loam to fine sandy loam surface layer 6 to 10 inches thick. This layer overlies a red clay subsoil. The lower layers are mottled red, pale-brown, light-gray, and yellowish-red clay to clay loam.

The Shubuta and Boswell soils are strongly acid and low to moderate in natural fertility. The content of organic matter is low, and available water capacity is low to moderate. Runoff is moderate, and erosion is a moderate hazard in cultivated areas.

These soils are used mostly for trees and pasture, but small areas are in crops. Crops respond fairly well to lime and fertilizer. Loblolly, shortleaf, and longleaf pines are well suited. (Capability unit IVe–6; woodland group 16; woodland forage site 1)

Shubuta and Boswell soils, 8 to 12 percent slopes, eroded (StD2).—These are strongly sloping, moderately well drained and well drained soils. They occur in bands so narrow and so intermingled that it is not practical to show them separately on a map of the scale used. The areas of these soils are no larger than surrounding areas consisting of a single soil.

The Shubuta soil amounts to 65 percent of this mapping unit, and the Boswell soil amounts to 30 percent. The remaining 5 percent consists of Ora and Ruston soils. All areas contain both Shubuta and Boswell soils, but each in varying amounts.

The Shubuta soil is moderately well drained and well drained. It has a dark grayish-brown fine sandy loam surface layer 4 to 6 inches thick. This layer overlies yellowish-red silty clay loam to clay loam. At a depth of 32 to 60 inches is mottled red, yellowish-red, light-gray, and brownish-yellow clay loam that is stratified with lenses of sand.

The Boswell soil is moderately well drained. It has a very pale brown to very dark gray sandy loam surface layer 6 to 10 inches thick. This layer overlies red clay 9 to 12 inches thick. The lower layers are mottled red, pale-brown, light-gray, and yellowish-red clay to clay loam.

The Shubuta and Boswell soils are strongly acid and low to moderate in natural fertility. Organic-matter content is low, and available water capacity is low to moderate. Runoff is moderate, and the hazard of erosion is moderate to severe in bare areas.

Most of this mapping unit is wooded, but some areas are in pasture. Loblolly pine and longleaf pine are well suited. (Capability unit VIe–2; woodland group 16; woodland forage site 2)

Shubuta and Boswell soils, 12 to 17 percent slopes (StE).—These are steep, moderately well drained and well drained soils. They occur in bands so narrow and so intermingled that it is not practical to show them separately on a map of the scale used. Areas of these soils are no larger than surrounding areas consisting of a single soil.

The Shubuta soil accounts for 60 percent of this mapping unit, and the Boswell soil accounts for 35 percent. The remaining 5 percent is Ruston soils. All areas contain both the Shubuta and Boswell soils, but each in varying amounts.

The Shubuta soil is moderately well drained and well drained. Its surface layer is dark grayish-brown to very dark grayish-brown sandy loam 6 to 10 inches thick. This layer overlies yellowish-red silty clay loam to clay loam. At a depth of 32 to 60 inches is mottled red, yellowish-red, light-gray, and brownish-yellow clay loam stratified with lenses of sand.

The Boswell soil is moderately well drained. It has a very pale brown to very dark gray sandy loam surface layer 6 to 10 inches thick. This layer overlies red clay 9 to 12 inches thick. The lower layers are mottled red, pale-brown, light-gray, and yellowish-red clay to clay loam.

The Shubuta and Boswell soils are strongly acid and have low to medium natural fertility. Organic-matter content is low, and available water capacity is low to moderate. Runoff is moderate, and erosion is a moderate to severe hazard in bare areas.

These soils are mainly in stands of mixed hardwoods and pines. Loblolly pine and longleaf pine are well suited. (Capability unit VIIe–4; woodland group 16; woodland forage site 2)

Stough Series

The Stough series consists of somewhat poorly drained soils that have a fragipan at a depth of 12 to 19 inches. These soils are in nearly level areas on sandy terraces. Slopes range from 0 to 3 percent. These soils developed in sandy loam and loam material. The main layers of a typical profile are—

0 to 4 inches, very dark grayish-brown, friable fine sandy loam.
4 to 8 inches, mixed light yellowish-brown and very dark grayish-brown, very friable fine sandy loam.
8 to 16 inches, light yellowish-brown, friable silt loam mottled with pale brown and light brownish gray.
16 to 29 inches, mottled light yellowish-brown, light-gray, and yellowish-brown, firm, slightly compact and brittle fine sandy loam (fragipan).
29 to 40 inches, light-gray, firm, compact and brittle fine sandy loam mottled with strong brown and yellowish brown (fragipan).
40 to 54 inches, mottled light-gray, strong-brown, and brownish-yellow, firm, compact and brittle fine sandy loam (fragipan).

Stough fine sandy loam, 0 to 3 percent slopes (SuA).—This somewhat poorly drained soil is on stream terraces and has a fragipan. The surface layer is very dark grayish-brown to grayish-brown fine sandy loam 6 to 8 inches thick. The subsoil is mainly light yellowish brown. At a depth of 12 to 19 inches is a fragipan consisting of mottled brown, yellow, and gray loam in the upper part and mottled gray and strong-brown loam to sandy loam in the lower part. Included in mapping were areas of Cahaba and Prentiss soils that make up 5 to 12 percent of the area mapped.

This soil is strongly acid, is low in natural fertility, and has low available water capacity. Roots and water easily penetrate the upper subsoil to a depth of 14 to 16 inches but are impeded in the fragipan. This soil generally has fairly good tilth, but it can be worked only within a fair range of moisture content. Erosion is generally a slight hazard in cultivated areas.

The main uses are for pasture and hardwoods. Hardwoods and loblolly pine are well suited to this soil. Some small areas are in crops, which grow well under good management. Drainage is needed in some places. (Capability unit IIIw–2; woodland group 15; woodland forage site 1)

Wehadkee Series

The Wehadkee series consists of poorly drained, acid soils on narrow, nearly level flood plains. These soils developed in recent alluvium of medium texture. The main layers of a typical profile are—

0 to 2 inches, light brownish-gray, friable silt loam.
2 to 11 inches, light-gray, friable loam.
11 to 20 inches, light-gray, friable loam.
20 to 48 inches, white, friable light clay loam.

Wehadkee silt loam (0 to 2 percent slopes) (Wk).—This poorly drained, acid soil is in alluvium on flood plains. The surface layer is thin and consists of light brownish-gray silt loam. It is underlain by layers that range from loam to light clay loam in texture and from light gray to white. The lower layers are mottled in some soils. Included in mapping were areas of Mantachie and Myatt soils that make up 3 to 5 percent of the area mapped.

This soil is strongly acid, has low to moderate natural fertility, and is low in content of organic matter. It is flooded frequently and is wet during rainy periods. Artificial drainage is needed to remove excess water.

This soil is better suited to pasture and trees than to tilled crops. It is mainly in hardwood trees, but a few areas are in pasture. (Capability unit IVw-4; woodland group 9; woodland forage site 3)

Formation, Classification, and Morphology of Soils

This section is in three main parts. The first part lists the factors of soil formation and discusses the effect these factors have had on the soils of Walthall County. In the second, the current system of classification is discussed and the soils are placed in classes of that system, and also in great soil groups of the old system. In the third, the morphology of the soils of each series in the county is discussed and a soil profile representative of the series is described in detail.

Factors in Soil Formation

Soils are a function of parent material, climate, plant and animal life, topography, and time. The nature of the soil at any point on the earth depends on the interaction of these five major factors at that point. All five of these factors come into play in the formation of every soil. The relative importance of each factor differs from place to place; sometimes one is more important and sometimes another. In extreme instances, one factor may dominate in the formation of a soil and fix most of its properties, as is common when the parent material consists of pure quartz sand. Little can happen to quartz sand, and the soils derived from it generally have faint horizons. Even in quartz sand, however, a distinct profile can form under certain kinds of vegetation if the topography is low and flat and the water table is high. Thus, for every soil the past combination of the major factors is of first importance in determining its present character.

Parent material

Parent material is the unconsolidated mass from which a soil develops. It is largely responsible for the chemical and mineralogical composition of soils. In this county the parent material of most of the soils is Coastal Plain sediments and loess. Some of the soils, however, formed in alluvium.

The soils that formed in loess are in the north-central part of the county where slopes are level to steep. In most places this loess is in a mantle 2 to 4 feet thick. Unweathered loess is uniform in physical and chemical composition. It is fine textured and has particles of irregular shape. Most soil scientists believe that this material was deposited by water on the flood plains and was later redeposited by wind on the older Coastal Plain formation.

The soils that formed in sediments of the Coastal Plain occur throughout the county, except in the north-central part. These soils formed in place from materials weathered from the Citronelle formation, which consists of sediments laid down by the sea (*3*). These soils are loamy to sandy and nearly level to very steep.

Along the larger streams in the county, the soils formed in alluvium, which is material that has been transported and redeposited by the streams. Much of the alluvium along the headwaters of McGee Creek originated from silty material, but the alluvium along the Bogue Chitto River and along McGee Creek below its headwaters originated from sandy material of the Coastal Plain.

The soils that formed in old alluvium on the high stream terraces and benches have been in place long enough for the development of a well-defined profile. The soils on the first bottoms have a weakly defined profile because floodwaters still bring in fresh deposits of soil material. Along drainageways throughout the county, there are narrow strips consisting of local alluvium that has been modified very little, if any, by the soil-forming processes.

Climate

Climate, primarily through the influence of precipitation and temperature, affects the physical, chemical, and biological relationships in the soils. Water dissolves minerals, supports biological activity, and transports minerals and organic residues through the soil profile. The amount of water that actually percolates through the soil in a broad area depends mainly on rainfall, relative humidity, and the length of the frost-free period. At a given point, the amount of downward percolation is also affected by physiographic position and by the permeability of the soil.

Temperature influences the kinds of organisms and their growth. It also affects the speed of physical and chemical reactions in the soils. The speed of these reactions is increased by the warm, moist weather that prevails most of the year. Water from the relatively high precipitation leaches bases and other soluble material and carries colloidal matter and other less soluble material downward in the profile. The mature soils in this county have been lightly leached, and leaching is progressing in the young soils.

In this county the soils are moist, and during most of the year, they are subject to leaching. Freezing and thawing have had little effect on weathering and soil-forming processes. The average temperature from about May 1 through October 30 is approximately 76° F.

Plant and animal life

Micro-organisms, plants, earthworms, and all other organisms that live on and in the soil have an important effect on its formation. Bacteria, fungi, and other micro-organisms aid in weathering rock and in decomposing organic matter. Large plants alter the soil microclimate, supply organic matter, and transfer elements from the subsoil to the surface soil. The kinds and numbers of plants and animals that live on and in the soil are determined mainly by the climate and partly by parent material.

Not much is known of the fungi and micro-organisms in the soils of this county, but they are mostly in the top few inches. Earthworms and other small invertebrates are most active in the surface layer, where they continually mix the soil. Apparently, the mixing of soil material by rodents has not been of much consequence in this county.

The native vegetation in the uplands was chiefly oak, hickory, loblolly pine, longleaf pine, and shortleaf pine.

In the better drained areas of the bottom lands, the trees were lowland hardwoods, chiefly yellow-poplar, sweetgum, ash, and oak. Cypress, birch, blackgum, beech, and oaks that tolerate water grew mainly in the poorly drained areas of the bottom lands.

Topography

Topography is largely determined by the formations underlying the soils, the geologic history of the region, and the dissection by streams. It influences soil formation through its effects on moisture, erosion, temperature, and vegetation, but this influence is modified by the other four factors of soil formation.

The slopes in Walthall County range from 0 to 40 percent. In upland areas the Ora, Providence, Ruston, and other soils have a thick, well-developed profile where slopes are less than 17 percent. From slopes of 17 percent or more, geologic erosion removes the soil material almost as quickly as it forms. As a result, the Guin soils and other soils on the steeper slopes have a thin, weakly developed profile. Although they are level or nearly level, soils formed in recent alluvium also have a weakly developed profile.

Time

The length of time required for the development of a soil depends largely on the other factors of soil formation. Less time is generally required for a soil to develop in a humid, warm region where plant growth is abundant than in a dry, cold region where vegetation is scanty. Also, less time is required if the parent material is coarse textured than if it is fine textured, other things being equal.

Geologically, the soils of this county are young. The material of the Coastal Plain was laid down by the sea during the Pliocene epoch. In the northwestern part of the county, this material was later covered by a thin mantle of loess during the ice age.

The soils of Walthall County vary considerably in age. The oldest soils, or those that have been in place the longest, generally show a greater degree of horizon differentiation than the younger ones. The soils have been in place a long time and are mature on the smoother parts of the uplands and on the older stream terraces. The horizons are less distinct in soils on the steeper slopes because geologic erosion has removed so much of the soil material. On the first bottoms and in areas of local alluvium, the soil material has been in place for such a short time that the soil profile has not reached maturity.

Classification of the Soils

Soils are classified so that we can more easily remember their significant characteristics. Classification enables us to assemble knowledge about the soils, to see their relationships to one another and to the whole environment, and to develop principles that help us in understanding their behavior and their response to manipulation. First through classification and then through use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

Thus in classification, soils are placed in narrow categories that are used in detailed soil surveys so that knowledge about the soils can be organized and used in managing farms, fields, and woodland; in developing rural areas; in engineering work; and in many other ways. Soils are placed in broad classes to facilitate study and comparison in large areas, such as countries and continents.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*2*) and later revised (*5*). The system currently used was adopted for general use by the National Cooperative Soil Survey in 1965. The current system is under continual study. Therefore, readers interested in developments of the system should search for the latest literature available (*4*, *8*). In table 8 the soil series of Walthall County are placed in some categories of the current system and in the great soil groups of the older system.

The current system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the criteria used as a basis for classification are soil properties that are observable or measurable. The properties are chosen, however, so that the soils of similar genesis, or mode of origin, are grouped together. Some of the classes in the current system are briefly defined in the following paragraphs.

ORDER: In the order of the current system of classification, soils are grouped according to common properties that seem to be the result of the same kinds of processes acting to about the same degree on soil material, and by this action forming horizons. Ten soil orders are recognized in the current system. They are Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The Entisols, Inceptisols, Alfisols, and Ultisols were recognized in Walthall County.

SUBORDER: Each order is subdivided into suborders, primarily on the basis of those soil characteristics that seem to produce classes having the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of waterlogging or soil differences resulting from the climate or vegetation.

GREAT GROUP: Soil suborders are separated into great groups according to the presence or absence of genetic horizons and the arrangement of these horizons. The horizons used to make separations are those in which clay, iron, or humus have accumulated or those that have pans that interfere with the growth of roots or the movement of water. The features used are the self-mulching properties of clay, soil temperature, major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium), and the like. The great group is not shown separately in table 8, because it is the last word in the name of the subgroup.

SUBGROUP: Great groups are subdivided into subgroups, one representing the central (typic) segment of a group, and others, called intergrades, that have properties of one great group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside of the range of any other great group, suborder, or order. The names of subgroups are derived by placing one or more adjectives before the name of the great group.

TABLE 8.—*Soil series classified according to current [1] system of classification and the 1938 system*

Series	Family	Subgroup	Order	Great soil groups in the 1938 system
Brookhaven	Fine silty, mixed, thermic	Ochreptic Fragiudalfs	Alfisols	Planosols.
Boswell	Fine, montmorillonitic, thermic	Vertic Paleudalfs	Alfisols	Red-Yellow Podzolic soils.
Bruno	Sandy, siliceous, nonacid, thermic	Typic Udifluvents	Entisols	Alluvial soils.
Bude	Fine silty, mixed, thermic	Aqueptic Fragiudalfs	Alfisols	Planosols.
Cahaba	Fine loamy, siliceous, thermic	Typic Hapludults	Ultisols	Red-Yellow Podzolic soils.
Cascilla	Fine silty, mixed, thermic	Fluventic Dystrochrepts	Inceptisols	Gray-Brown Podzolic soils.
Collins	Coarse silty, mixed, acid, thermic	Aquic Udifluvents	Entisols	Alluvial soils.
Falaya	Coarse silty, mixed, acid, thermic	Aeric Haplaquepts	Inceptisols	Alluvial soils.
Frost	Fine silty, mixed, thermic	Typic Glossaqualfs	Alfisols	Low-Humic Gley soils.
Guin	Loamy, skeletal, siliceous thermic	Typic Dystrochrepts	Inceptisols	Regosols.
Iuka	Coarse loamy, siliceous, acid, thermic	Aquic Udifluvents	Entisols	Alluvial soils.
Lucy	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols	Red-Yellow Podzolic soils.
Mantachie	Fine loamy, siliceous, acid, thermic	Aeric Haplaquepts	Inceptisols	Alluvial soils.
Mashulaville	Coarse loamy, siliceous, thermic	Typic Fragiaquults	Ultisols	Planosols.
Myatt	Fine loamy, mixed, thermic	Typic Ochraquults	Ultisols	Low-Humic Gley soils.
Ochlockonee	Coarse loamy, siliceous, acid, thermic	Typic Udifluvents	Entisols	Alluvial soils.
Ora	Fine loamy, mixed, thermic	Typic Fragiudults	Ultisols	Red-Yellow Podzolic soils.
Pheba	Coarse silty, mixed, thermic	Aqueptic Fragiudults	Ultisols	Planosols.
Prentiss	Coarse loamy, siliceous, thermic	Typic Fragiudults	Ultisols	Red-Yellow Podzolic soils.
Providence	Fine silty, mixed, thermic	Typic Fragiudalfs	Alfisols	Red-Yellow Podzolic soils.
Rumford	Coarse loamy, siliceous, thermic	Typic Hapludults	Ultisols	Red-Yellow Podzolic soils.
Ruston	Fine loamy, mixed, thermic	Typic Paleudults	Ultisols	Red-Yellow Podzolic soils.
Saffell	Loamy skeletal, siliceous, thermic	Typic Hapludults	Ultisols	Red-Yellow Podzolic soils.
Savannah	Fine loamy, mixed, thermic	Typic Fragiudults	Ultisols	Red-Yellow Podzolic soils.
Shubuta	Clayey, mixed, thermic	Typic Paleudults	Ultisols	Red-Yellow Podzolic soils.
Stough	Coarse loamy, siliceous, thermic	Aquic Fragiudults	Ultisols	Planosols.
Wehadkee	Fine loamy, mixed, acid, thermic	Typic Haplaquepts	Inceptisols	Low-Humic Gley soils.

[1] Placement of some series in the current system of classification, particularly in families, may change as more precise information becomes available.

FAMILY: Families are separated within a subgroup primarily on the basis of properties important to the growth of plants or to the behavior of soils where used for engineering. Among the properties considered are texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence.

Morphology of Soils

This subsection discusses important processes responsible for horizon differentiation, or the forming of horizons, in a soil profile. Also described are the soil series recognized in the county and a profile representative of each series.

A profile is a succession of layers, or horizons, that extends from the soil surface downward. Adjacent layers in a profile differ in one or more properties, such as color, texture, structure, consistence, porosity, or reaction. These differences are a record of the effect that the soil-forming processes had on the development of horizons.

Most soil profiles contain three major horizons, called A, B, and C. The A horizon is the surface layer. It can be either the horizon of maximum organic matter, called the A1, or the horizon of maximum leaching of dissolved or suspended material called the A2. In some profiles both an A1 and an A2 horizon have developed. The B horizon lies immediately beneath the A horizon and is called the subsoil. It is a horizon of maximum accumulation of dissolved or suspended material, such as iron or clay. The B horizon generally is firmer than horizons immediately above and below it. In some profiles a B horizon has not formed. The C horizon has been only slightly affected by the processes of soil formation, but it may have been materially modified by leaching.

Processes of soil horizon differentiation

The differentiation of horizons in the soils of this county is mainly the result of one or more of these processes: (1) accumulation of organic matter; (2) leaching of calcium carbonates and bases; (3) formation and translocation of silicate clay minerals; and (4) reduction and transfer of iron. In most soils more than one of these processes have been active in the development of horizons.

In many soils in Walthall County, the accumulation of organic matter in the upper part of the profile has been important because this accumulation results in the formation of an A1 horizon. For example, an A1 horizon has formed in the Boswell, Collins, and Falaya soils. The content of organic matter in the soils of this county generally is low or very low.

Carbonates and bases have been leached from nearly all of the soils in this county. This leaching has contributed to the development of horizons in an indirect way by permitting the subsequent translocation of silicate clay minerals in some soils. Most of the soils in this county are moderately to strongly leached.

The leaching of bases and the subsequent translocation of silicate clay are among the most important processes of horizon differentiation in the soils of Walthall County. In many soils the eluviated A2 horizon has a platy structure, and it is lower in content of clay than the B horizon and generally is lighter in color. The B horizon commonly has accumulations of clay (clay films) in its pores and on the faces of its peds. In the Ora, Providence, Ruston, and

other soils, translocated silicate clays have accumulated in the B horizon in the form of clay films.

The reduction and transfer of iron, a process called gleying, is evident in poorly drained Frost, Wehadkee, and Bude soils. This gleying is indicated by the grayish color of horizons below the surface layer. Segregation of iron is indicated in some horizons of the Stough or Prentiss soils by reddish-brown mottles and concretions.

Technical descriptions of the soil series

In this subsection the soil series represented in Walthall County, including a profile typical of the series, are described in alphabetic order. For a description of each mapping unit in the county, as well as additional information about the series, refer to the section "Descriptions of the Soils."

BOSWELL SERIES

The soils of the Boswell series have a loamy surface layer and a clay-enriched subsoil. In the upper 10 inches, the B horizon lacks mottles with a chroma of 2 or less. Slopes range from 5 to 17 percent.

The Boswell soils are adjacent to the Shubuta, Ora, and Ruston soils. Boswell soils have a more plastic subsoil than Shubuta soils, which are clay loam in the lower part of the B horizon. Clay is more plentiful in the Boswell soils than in the Ora and Ruston, and drainage is poorer. The Boswell soils lack the fragipan that occurs in the Ora soils. They are more clayey and are not so well drained as Ora and Ruston soils.

Profile of Boswell sandy loam on a slope of 7 percent in a pasture in the southeastern part of the county, 2½ miles north of the State line (NW¼NW¼ sec. 19, T. 1 N., R. 13 E.):

A1—0 to 6 inches, very dark gray (10YR 3/1) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A2—6 to 9 inches, very pale brown (10YR 7/3) sandy loam with few, fine, faint mottles of very dark gray (10YR 3/1); weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B21t—9 to 19 inches, red (2.5YR 4/6) clay; strong, fine and medium, angular blocky structure; very firm when moist, very plastic when wet; thick clay films on ped faces; very strongly acid; clear, wavy boundary.

B22t—19 to 27 inches, mottled red (10R 4/6), pale-brown (10YR 6/3), light-gray (10YR 7/2), and yellowish-red (5YR 5/6) clay; strong, fine and medium, angular blocky structure; firm when moist, very plastic when wet; thick clay films on ped faces; very strongly acid; clear, wavy boundary.

B23t—27 to 38 inches, yellowish-red (5YR 4/6) clay with many, medium, distinct mottles of pinkish white (5YR 8/2); strong, medium, angular blocky structure; very firm when moist, plastic when wet; thick clay films on ped faces; very strongly acid; clear, wavy boundary.

B3t—38 to 50 inches, mottled red (2.5YR 4/8), pinkish-white (5YR 8/2), and light brownish-gray (2.5Y 6/2) clay; strong, medium, angular blocky structure; very firm when moist, plastic when wet; thick clay films on ped faces; very strongly acid; clear, wavy boundary.

C—50 to 56 inches, light-gray (7.5YR 7/0) clay with few, fine, prominent mottles of red (2.5YR 4/8); massive; very firm when moist, plastic when wet; thick clay films in pores and cracks; strongly acid.

The A1 horizon ranges from very dark gray to dark grayish brown in color and from fine sandy loam or sandy loam to loam in texture. The C horizon ranges from sandy clay loam or clay loam to clay.

259-825—67——5

BROOKHAVEN SERIES

The soils of the Brookhaven series are on broad, nearly level and gently sloping ridges. Slopes range from 0 to 5 percent. These soils developed in a thin silty mantle and underlying loamy material.

Brookhaven soils are characterized by a bisequal, or two-storied, profile and an A′2 horizon. Their B horizon is thin and has hardly any clay films on its peds. It is dominantly yellowish brown (10YR hue), and it lacks mottles with a chroma of 2 or less in the upper 10 inches of the horizon.

The Brookhaven soils are adjacent to the Providence and Bude soils. In contrast to the Providence soils, Brookhaven soils have a bisequal profile, are not so clayey in the upper B horizon, and do not have an increase of sand in the lower horizons. In the upper 10 inches of the B horizon, Brookhaven soils do not have mottles with a chroma of 2 or less, but Bude soils do.

Profile of Brookhaven silt loam on a slope of 1 percent in an area cleared of hardwoods, 3 miles west of Sartinville, one-fourth mile east of church made of concrete blocks, and 100 feet north of blacktopped road (SE¼NE¼ sec. 11, T. 4 N., R. 10 E.):

A1—0 to 4 inches, black (10YR 2/1) silt loam; weak, fine and medium, granular structure; friable; few fine roots; strongly acid; clear, wavy boundary.

A2—4 to 8 inches, dark-brown (10YR 4/3) silt loam with few, fine, distinct mottles of light gray (10YR 7/2), grayish brown (10YR 5/2), and very dark gray (10YR 3/1); weak, fine, granular structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B21—8 to 11 inches, yellowish-brown (10YR 5/6) heavy silt loam with few, fine, faint mottles of very pale brown (10YR 7/3); weak, fine, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B22—11 to 19 inches, yellowish-brown (10YR 5/6) heavy silt loam; weak to moderate, fine and medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

A′2&B′x—19 to 26 inches, mottled light-gray (10YR 7/2), pale-brown (10YR 6/3), yellowish-brown (10YR 5/6), and dark yellowish-brown (10YR 4/4) silt loam; weak, thin and medium, platy and subangular blocky structure; friable, slightly compact and brittle; cracks filled with gray silt; strongly acid; clear, wavy boundary.

IIB′x1—26 to 34 inches, mottled yellowish-brown (10YR 5/6 and 5/8), gray (10YR 6/1), and brown to dark-brown (7.5YR 4/4) light clay loam; moderate, medium, subangular blocky and angular blocky structure; firm, compact and brittle; thick, nearly continuous clay films on ped faces; cracks filled with gray silt; strongly acid; clear, wavy boundary.

IIB′x2—34 to 42 inches, mottled strong-brown (7.5YR 5/6), light-gray (N 7/0), brown to dark-brown (7.5YR 4/4), yellowish-brown (10YR 5/6), and red (2.5YR 4/8) light clay loam; moderate, medium, subangular blocky and angular blocky structure; firm, compact and brittle; clay films on ped faces; cracks filled with gray silt; strongly acid; clear, wavy boundary.

IIB′x3—42 to 58 inches, strong-brown (7.5YR 5/6) clay loam with common, medium, faint mottles of yellowish brown (10YR 5/6), distinct red (2.5YR 4/8), and light gray (N 7/0); moderate, medium, subangular blocky and angular blocky structure; firm, compact and brittle; clay films on ped faces; cracks filled with gray silt; strongly acid.

The A horizon ranges from dark brown or dark grayish brown to black. In some places the A′2 horizon is distinct, but in other places it is mixed with the B′ horizon. Above the fragipan the B horizon ranges from yellowish brown to strong brown in color and from silt loam to light silty

clay loam in texture. The fragipan is at a depth of 18 to 23 inches. The B'x2 horizon ranges from heavy silt loam to clay loam.

BRUNO SERIES

The soils of the Bruno series are along the larger streams on flood plains that have slopes of 0 to 2 percent. These soils developed in sandy alluvium. They are characterized by a thick profile of loamy sand that is dominantly light yellowish brown. The profile is free of mottles with a chroma of 2 or less.

The Bruno soils are adjacent to the Ochlockonee soils and to Sandy alluvial land. Bruno soils are coarser textured than Ochlockonee and have been in place longer than Sandy alluvial land, which is stratified.

Profile of Bruno loamy sand on a slope of 1 percent in an idle field adjacent to a pipeline on the east bank of the Bogue Chitto River, ¾ mile east of Pike County line and ½ mile south of State Route 48 (NE¼NE¼ sec. 25, T. 2 N., R. 9 E.):

A1—0 to 18 inches, light yellowish-brown (10YR 6/4) loamy sand; structureless; loose; many fine roots; strongly acid; clear, wavy boundary.

C1—18 to 30 inches, light yellowish-brown (10YR 6/4) loamy sand; structureless; loose; few fine and medium pebbles; few fine roots; strongly acid; clear, wavy boundary.

C2—30 to 40 inches, brown (10YR 5/3) loamy sand; structureless; loose; strongly acid; clear, wavy boundary.

C3—40 to 56 inches, grayish-brown (10YR 5/2) loamy sand; structureless; loose; strongly acid.

The A horizon ranges from light yellowish brown or yellowish brown to very dark grayish brown in color and from coarse loamy sand to sandy loam in texture. The C horizon is light yellowish-brown, brown, pale-brown, or grayish-brown loamy sand to coarse sandy loam.

BUDE SERIES

The soils of the Bude series developed in a thin silty mantle on broad ridges that have slopes of 0 to 2 percent. They are characterized by a bisequal profile, a fragipan, mottles with a chroma of 2 or less in the upper 10 inches of the B horizon, and very few or no clay films above the fragipan.

Bude soils are adjacent to the Providence and the Brookhaven soils. In contrast to the Providence soils, the Bude soils have a bisequal profile, are not so clayey in the upper part of the B horizon, and do not have an increase of sand in the lower horizons. The Bude soils contain more clay films than the Brookhaven soils, which are free of mottles with a chroma of 2 or less in the upper 10 inches of the B horizon.

Profile of Bude silt loam on a slope of 1 percent in an idle field, 500 feet east of gravel road, 100 yards south of private road, and 1¼ miles southeast of block church (SE¼SW¼ sec. 14, T. 4 N., R. 10 E.):

A1—0 to 5 inches, very dark gray (10YR 3/1) silt loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A2—5 to 7 inches, dark-gray (10YR 4/1) silt loam with few, faint, distinct mottles of gray (10YR 6/1), yellowish brown (10YR 5/4), and very dark gray (10YR 3/1); weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—7 to 10 inches, brownish-yellow (10YR 6/6) silt loam with common, medium, distinct mottles of light gray (10YR 7/2) and very dark gray (10YR 3/1); weak, fine, subangular blocky structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B2—10 to 18 inches, yellowish-brown (10YR 5/6) heavy silt loam with common, medium, distinct mottles of light brownish gray (2.5Y 6/2); weak, fine and medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

A'2x&B'x—18 to 28 inches, mottled light brownish-gray (2.5Y 6/2) and strong-brown (7.5YR 5/8) silt loam to silty clay loam; moderate, fine and medium, subangular blocky structure; cracks filled with gray silt; firm, compact and brittle; patchy clay films on ped faces; strongly acid; clear, wavy boundary.

IIB'x1—28 to 54 inches, brownish-yellow (10YR 6/6) heavy loam to silt loam with common, medium, distinct mottles of strong brown (7.5YR 5/8) and gray (10YR 6/1); moderate, medium, subangular blocky structure; cracks filled with gray silt; firm, compact and brittle; sand increases with depth; many, fine and medium, black and brown concretions; clay films on ped faces; strongly acid; clear, wavy boundary.

IIB'x2—54 to 62 inches, brownish-yellow (10YR 6/6) heavy loam with common, medium, distinct mottles of strong brown (7.5YR 5/8), gray (10YR 6/1), and red (2.5YR 4/8); moderate, medium, subangular blocky structure; cracks filled with gray silt; firm, compact and brittle; many, fine and medium, black and brown concretions; patchy clay films; sand grains bridged with clay; strongly acid.

The A1 and A2 horizons range from very dark gray to dark grayish brown. The B2 horizon ranges from yellowish brown to brownish yellow mottled with shades of gray. Its texture is heavy silt loam to light silty clay loam. Depth to the fragipan ranges from 14 to 18 inches. The fragipan ranges from silty clay loam, silt loam, or clay loam to loam.

CAHABA SERIES

The soils of the Cahaba series developed in sandy material on broad slopes of 0 to 5 percent. These soils have a B2 horizon that is 18 to 35 percent clay and is less than 24 inches thick. This solum is 41 inches or less thick.

Cahaba soils are adjacent to Prentiss and Rumford soils. Cahaba soils have a finer textured, clay-enriched horizon than have the Prentiss soils but lack a fragipan. The clay-enriched horizon of the Cahaba soils has a larger percentage of clay than that of the Rumford soils.

Profile of Cahaba fine sandy loam on a slope of 1 percent in a pasture 3 miles southwest of Lexie, 660 feet west of gravel road and one-fourth mile east of the Bogue Chitto River, near a large pecan tree (SW¼NE¼ sec. 17, T. 1 N., R. 10 E.):

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B&A—6 to 9 inches, mixed reddish-brown (5YR 4/4) and dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B21t—9 to 24 inches, yellowish-red (5YR 5/6) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine roots; thin patchy clay films on ped faces; strongly acid; clear, wavy boundary.

B22t—24 to 31 inches, brown (7.5YR 4/4) light sandy clay loam; weak to moderate, fine and medium, subangular blocky structure; friable; few fine roots; thin patchy clay films on ped faces; strongly acid; clear, wavy boundary.

B3t—31 to 41 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, granular structure; very friable; sand grains bridged with clay; few fine roots; few fine pebbles; strongly acid; clear, wavy boundary.

C1—41 to 60 inches, mixed yellowish-brown (10YR 5/4) and light yellowish-brown (10YR 6/4) light sandy loam to loamy sand; weak, fine, granular structure; very friable; strongly acid; clear, wavy boundary.

C2—60 to 66 inches, light-gray (10YR 7/2) loamy sand to sand with many, medium, distinct mottles of pale brown (10YR 6/3) and yellowish brown (10YR 5/8); structureless; very friable; few fine pebbles; strongly acid.

The A horizon is fine sandy loam or loamy sand. It ranges from dark grayish brown to very dark grayish brown in undisturbed areas and from dark grayish brown to brown in disturbed areas. The B2 horizon ranges from red through yellowish red to strong brown. Its texture ranges from heavy sandy loam to sandy clay loam. The C horizon ranges from sandy loam to sand. In some places small pieces of quartz gravel are in the B and C horizons.

CASCILLA SERIES

In the Cascilla series are soils on narrow and broad flood plains that have slopes of 0 to 2 percent. These soils are characterized by a distinct B horizon without clay films on its peds. Mottles with a chroma of 2 or less do not occur above a depth of 30 inches.

Cascilla soils are adjacent to Collins and Falaya soils. All of these soils developed in silty alluvium. Unlike the Collins and Falaya soils Cascilla soils have a B horizon and are not mottled with a chroma of 2 or less above a depth of 30 inches. They are not so wet as the Falaya soils, which are saturated with water in some periods.

Profile of Cascilla silt loam on a slope of 1 percent in a pasture 3¼ miles east of Pike County line, 6 miles south of Lawrence County line, 12 miles north of Tylertown and 70 yards north of gravel road (SE¼SW¼ sec. 34, T. 4 N., R. 10 E.):

Ap 0 to 6 inches, very dark grayish-brown (10YR 3/2) silt loam containing much sand; weak, fine, granular structure; very friable; few fine pebbles; many fine roots; strongly acid; clear, wavy boundary.

A3—6 to 9 inches, dark-brown (7.5YR 3/2) silt loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—9 to 20 inches, dark-brown (7.5YR 3/2) silt loam with few, fine, faint mottles of brown (7.5YR 4/4); weak, fine, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B21—20 to 30 inches, brown (7.5YR 4/4) heavy silt loam with peds coated with dark brown (7.5YR 3/2); weak, fine and medium, subangular blocky structure; friable; few, thin, patchy clay films, chiefly in pores; few fine roots; few fine pores; few, fine, black concretions; strongly acid; clear, wavy boundary.

B22—30 to 35 inches, brown (7.5YR 4/4) heavy silt loam with few, medium, faint mottles of yellowish brown (10YR 5/4); weak, fine and medium, subangular blocky structure; friable; common, coarse, black concretions; few, thin, patchy clay films, chiefly in pores; strongly acid; clear, wavy boundary.

B31—35 to 46 inches, brown (7.5YR 4/4) silt loam; sand increases with depth; common, fine, faint mottles of yellowish brown (10YR 5/4); weak, fine and medium, subangular blocky structure; friable; common, medium, black concretion and coats; few, thin, patchy clay films, mainly in pores; strongly acid; clear, wavy boundary.

B32—46 to 50 inches, mottled yellowish-brown (10YR 5/4), brown (7.5YR 4/4), and pale-brown (10YR 6/3) silt loam containing much sand; weak, fine and medium, subangular blocky structure; friable; common, fine, black concretions and coats; few, thin, patchy clay films, mainly in pores; sand grains bridged with clay; strongly acid.

The A horizon is very dark grayish brown to dark brown. The B2 horizon is free of mottles in some places. The B3 horizon ranges from brown to mottled yellowish brown, dark brown, and pale brown. This horizon has more sand in its lower part than in its upper part.

COLLINS SERIES

The soils of the Collins series are on flood plains that have slopes of 0 to 2 percent. These soils have an AC horizon and, at a depth of about 20 inches, have mottles with a chroma of 2 or less.

The Collins soils are adjacent to the Cascilla and Falaya soils. All of these soils formed in alluvium. Unlike the Cascilla soils, the Collins soils do not have a B horizon but have mottles with a chroma of 2 or less. Collins soils are not so wet as Falaya soils, which are saturated at times and have distinct mottles with a chroma of 2 or less within 10 to 20 inches of the surface.

Profile of Collins silt loam on a slope of 1 percent in a wooded area 3 miles southeast of Sartinville, one-half mile southwest of McGee Creek Baptist Church, and 130 feet west of gravel road (NE¼NE¼ sec. 33, T. 4 N., R. 11 E.):

A11—0 to 4 inches, very dark brown (10YR 2/2) silt loam; weak, fine, granular and subangular blocky structure; friable; few fine roots; medium acid; clear, wavy boundary.

A12—4 to 8 inches, dark brown (7.5YR 3/2) silt loam; weak, fine, granular and subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

AC—8 to 20 inches, dark-brown (7.5YR 3/2) silt loam with common, fine, distinct mottles of yellowish brown (10YR 5/6); weak, fine, granular and subangular blocky structure; friable; few fine roots; strongly acid; abrupt, smooth boundary.

C1—20 to 29 inches, mottled brown (7.5YR 4/4), dark yellowish-brown (10YR 4/4), pale-brown (10YR 6/3), and light-gray (10YR 7/1) silt loam; weak, fine, granular structure; friable; strongly acid; clear, wavy boundary.

C2—29 to 42 inches, mottled light-gray (10YR 7/1), yellowish-brown (10YR 5/6), and brown (7.5YR 4/4) silt loam; weak, fine, granular structure; friable; many, fine, brown and black concretions; strongly acid; abrupt, smooth boundary.

C3g—42 to 54 inches, light-gray (10YR 6/1) loam with common, medium, distinct mottles of yellowish brown (10YR 5/6); structureless; friable; few, fine, brown and black concretions; strongly acid.

The A horizon ranges from very dark brown to dark brown. Dominant colors in the upper part of the C horizon range from dark brown to yellowish brown. Grayish mottles occur at a depth of 20 to 30 inches.

FALAYA SERIES

In the Falaya series are soils on flood plains that have slopes of 0 to 2 percent. These soils contain a large amount of silt, have an AC profile, and have distinct mottles with a chroma of 2 or less at a depth of less than 20 inches.

The Falaya soils are adjacent to the Cascilla and Collins soils. All of these soils formed in silty alluvium. Unlike the Cascilla soils, the Falaya soils do not have a B horizon, but do have mottles with a chroma of 2 or less. Falaya soils are wetter than the Collins soils and have mottles with a chroma of 2 or less nearer the surface.

Profile of Falaya silt loam on a slope of 1 percent in a forested area 1 mile east of Sartinville on west side of gravel road (NE¼SW¼ sec. 9, T. 4 N., R. 11 E.):

O1—1 inch to 0, decaying leaves from hardwoods.

A1—0 to 4 inches, mixed very dark grayish-brown (10YR 3/2) and dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; many fine and medium roots; medium acid; clear, wavy boundary.

C1—4 to 22 inches, very dark grayish-brown (10YR 3/2) silt loam with common, medium, distinct mottles of light gray (10YR 7/1); weak, fine, granular structure; friable; many fine and medium roots; strongly acid; clear, wavy boundary.

C2g—22 to 31 inches, mottled light-gray (10YR 7/1) and very dark grayish-brown (10YR 3/2) silt loam; weak, fine, granular structure; friable; many fine and medium roots; strongly acid; clear, wavy boundary.
C3g—31 to 36 inches, mottled gray (N 6/0) and dark yellowish-brown (10YR 4/4) silt loam; weak, fine, granular structure; friable; few fine roots; many fine and medium concretions; black coatings; strongly acid; abrupt, smooth boundary.
C4g—36 to 48 inches, gray (10YR 5/1) heavy silt loam with few, fine, distinct mottles of yellowish brown (10YR 5/6); structureless; friable; many, fine, soft, black concretions; strongly acid; clear, wavy boundary.
C5g—48 to 52 inches, gray (10YR 6/1) heavy silt loam with few, fine, distinct mottles of yellowish brown (10YR 5/6); structureless; friable; strongly acid.

The A1 horizon ranges from very dark grayish brown to brown in color and from silt loam to loam in texture. In some places the profile is free of grayish mottles to a depth of 10 to 17 inches. The C horizon is silt loam in most places.

FROST SERIES

The soils of the Frost series developed in a thin silty mantle on ridges and in depressions. Slopes range from 0 to 2 percent. These soils have a thick silt loam A horizon. Tongues of the bleached A2 horizon extend into the gray, clay-enriched B2 horizon, which has thick clay films on ped faces.

Frost soils are adjacent to the Brookhaven and Bude soils, which have a fragipan. The Frost soils lack the bisequal profile of the Brookhaven soils and the thin upper B horizon that is essentially devoid of clay films and free of mottles with a chroma of 2 or less. Frost soils also lack the mottles with a chroma of 2 or less that occur in the upper 10 inches of the B horizon of the Bude soils.

Profile of Frost silt loam on a slope of 1 percent in a forested area, one-half mile south of Lawrence County line, 4½ miles east of Pike County line, and 330 yards east of gravel road (NE¼NE¼ sec. 3, T. 4 N., R. 10 E.):

A1—0 to 3 inches, dark-gray (10YR 4/1) silt loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, smooth boundary.
A21g—3 to 20 inches, light brownish-gray (2.5Y 6/2) silt loam with many, medium, distinct root stains of yellowish brown (10YR 5/6); weak, fine and coarse, prismatic structure breaking to weak, medium, subangular blocky and granular structure; friable; many fine and medium roots; very strongly acid; gradual, irregular boundary.
A22g&Bg—20 to 24 inches, gray (5Y 6/1) silt loam with many, medium, distinct mottles of yellowish brown (10YR 5/8) and yellowish red (5YR 4/6); weak, fine and medium, subangular and angular blocky structure; friable; dark-gray (10YR 4/1) and very dark gray (10YR 3/1) clay films on some ped faces; few fine roots; many worm casts; tongues of material from the A21g horizon; very strongly acid; gradual, irregular boundary.
B21tg—24 to 30 inches, gray (10YR 5/1) silty clay loam with large gray silt pockets; many, medium, distinct mottles of yellowish brown (10YR 5/6) and yellowish red (5YR 5/6); moderate, medium and coarse, subangular blocky structure; firm; few black concretions; dark-gray (10YR 4/1), thick clay films on ped faces; tongues of material from the A21g and A22g&Bg horizons; very strongly acid; gradual, wavy boundary.
B22tg—30 to 50 inches, mixed dark-gray (2.5Y 5/0) to gray (2.5Y 4/0) silty clay loam; moderate, medium and coarse, angular blocky structure; firm when moist, plastic when wet; dark-gray (10YR 4/1), thick clay films on ped faces; very strongly acid; gradual, wavy boundary.
B23tg—50 to 54 inches, gray (2.5Y 6/0) silty clay loam with many, coarse, distinct mottles of strong brown (7.5YR 5/6); moderate, medium and coarse, angular blocky structure; firm when moist, plastic when wet; clay films on ped faces; content of sand increases with depth; very strongly acid.

The A1 horizon ranges from dark gray to gray. The A2 horizon ranges from light brownish gray or gray to mottled gray, yellowish brown, and strong brown. The B21tg horizon ranges from silty clay loam to light silty clay. It is predominantly gray, but in some places it is very dark gray or dark gray mottled with strong brown and light yellowish brown.

GUIN SERIES

The soils of the Guin series developed in sand and gravel on slopes of 12 to 40 percent. They contain much gravel throughout the profile and do not have a B horizon.

Guin soils are adjacent to Lucy and Ruston soils. Guin soils are higher in content of gravel than the Lucy or Ruston soils and lack their clay-enriched B horizon. The A horizon of Guin soils is thinner than that of the Lucy soils.

Profile of Guin gravelly fine sandy loam on a slope of 20 percent in a stand of longleaf pine and mixed hardwoods, one-half mile east of Pike County line, about 5 miles northwest of Tylertown and 200 yards west of gravel road (SW¼SW¼ sec. 25, T. 3 N., R. 9 E.):

O1 1 inch to 0, pine needles and oak leaves.
A11—0 to 5 inches, black (10YR 2/1) gravelly fine sandy loam; weak, fine, granular structure; friable; many fine and medium roots; fine and medium quartz gravel 40 percent by volume; strongly acid; clear, wavy boundary.
A12—5 to 12 inches, very dark grayish-brown (10YR 3/2) gravelly sandy loam; weak, fine, granular structure; friable; many fine roots; fine and medium quartz gravel 25 percent by volume; strongly acid; clear, wavy boundary.
C1—12 to 24 inches, light yellowish-brown (10YR 6/4) gravelly sand; structureless; loose; fine to coarse quartz gravel 85 percent by volume; strongly acid; clear, wavy boundary.
C2—24 to 40 inches, very pale brown (10YR 7/3) gravelly sand; structureless; loose; fine to coarse quartz gravel 85 percent by volume; strongly acid; clear, wavy boundary.
C3—40 to 60 inches, yellowish-red (5YR 5/6) coarse sand and coarse gravel; massive; firm in place, and loose when disturbed.

The A horizon ranges from gravelly fine sandy loam to gravelly loamy sand. It is 6 to 12 inches thick. The C horizon ranges from loamy sand to sand and gravel.

IUKA SERIES

In the Iuka series are soils that developed in loamy alluvium on the flood plains. This alluvium is less than 18 percent clay. Slopes range from 0 to 2 percent. Mottles with a chroma of 2 or less are at a depth ranging from 18 to 31 inches.

The Iuka soils are adjacent to the Ochlockonee and Mantachie soils. Iuka soils are similar to the Ochlockonee soils in texture but are less well drained. They are not so poorly drained as the Mantachie soils, which have mottles with a chroma of 2 or less at a depth of 5 to 18 inches.

Profile of Iuka silt loam on a slope of 1 percent in a hayfield one-eighth mile east of McGee Creek Baptist Church, 110 yards south of paved road, and 100 feet east of McGee Creek (SW¼SE¼ sec. 27, T. 4 N., R. 11 E.):

A11—0 to 6 inches, very dark grayish-brown (10YR 3/2) silt loam containing much sand; thin bands of dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

A12—6 to 8 inches, black (10YR 2/1) silt loam containing much sand; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

C1—8 to 16 inches, dark-brown (10YR 3/3) loam with few, fine, faint mottles of yellowish-brown (10YR 5/4); weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

C2—16 to 25 inches, yellowish-brown (10YR 5/4) loam with few, fine, faint mottles of dark brown (10YR 3/3); weak, fine, granular structure; very friable; few fine roots; strongly acid; clear, wavy boundary.

C3g—25 to 31 inches, gray (10YR 6/1) loam with common medium, distinct mottles of yellowish brown (10YR 5/6) and pale brown (10YR 6/3); weak, fine, granular structure or structureless; very friable; few, fine, brown and black concretions; strongly acid; clear, wavy boundary.

C4g—31 to 46 inches, mottled gray (N 6/0), yellowish-brown (10YR 5/6), and pale-brown (10YR 6/3) loam to heavy sandy loam; structureless; very friable; many, fine, brown and black concretions; strongly acid; clear, wavy boundary.

C5g—46 to 54 inches, gray (N 5/0) loam with common, medium, distinct mottles of light olive brown (2.5Y 5/4); structureless; very friable; few brown and black concretions; strongly acid.

The A1 horizon ranges from sandy loam to silt loam. The underlying horizons generally range from sandy loam to loam, but thin strata of light sandy clay loam occur in a few places.

LUCY SERIES

The soils of the Lucy series are on slopes of 17 to 40 percent. These soils have a loamy sand surface layer 20 to 40 inches thick and a clay enriched B horizon. They are not mottled.

Lucy soils are adjacent to the Ruston and Guin soils. The thick loamy sand A horizon in the Lucy soils does not occur in the Ruston soils. Lucy soils are much less gravelly than the Guin soils, which lack a B horizon.

Profile of Lucy loamy sand on a slope of 20 percent in a stand of mixed pines and hardwoods, ½ mile west and ½ mile south of Marion County line (SE¼SE¼ sec. 12, T. 1 N., R. 13 E.):

O1—1 inch to 0, pine needles and oak leaves.

A1—0 to 2 inches, very dark grayish-brown (10YR 3/2) loamy sand; structureless; loose; many fine and medium roots; strongly acid; clear, wavy boundary.

A2 2 to 30 inches, yellowish-brown (10YR 5/4) loamy sand; structureless; loose; many fine and medium roots; strongly acid; clear, wavy boundary.

B1—30 to 40 inches, yellowish-red (5YR 5/6) sandy loam; weak, fine, granular and subangular blocky structure; very friable; few fine roots; strongly acid; abrupt, smooth boundary.

B2t—40 to 56 inches, red (2.5YR 4/6) sandy clay loam; weak, fine and medium, subangular blocky structure; friable; few fine quartz pebbles that decrease in volume with depth; sand grains bridged with clay; strongly acid.

The A horizon ranges from 20 to 40 inches in thickness. The A1 horizon is very dark grayish brown to black, and the A2 horizon is yellowish brown to strong brown.

MANTACHIE SERIES

In the Mantachie series are soils that developed in loamy alluvium that is less than 18 percent clay. These soils are on flood plains that have slopes of 0 to 2 percent. Mottles with a chroma of 2 or less occur at a depth of 5 to 18 inches.

The Mantachie soils are adjacent to the Iuka and Wehadkee soils. Mantachie soils are wetter than Iuka soils, which lack mottles with a chroma of 2 or less above a depth of 18 inches. Mantachie soils are not so gray nor so poorly drained as the Wehadkee soils, which are saturated for long periods.

Profile of Mantachie loam on a slope of 1 percent in a mixed hardwood site, 11 miles northeast of Tylertown, 2¼ miles southwest of Darbun, on east side of McGee Creek, and 75 feet south of gravel road (NE¼NE¼ sec. 11, T. 3 N., R. 11 E.):

A1—0 to 5 inches, dark grayish-brown (10YR 4/2) to grayish-brown (10YR 5/2) loam; weak, fine, granular structure; very friable; many fine and medium roots; strongly acid; clear, wavy boundary.

C1—5 to 12 inches, brown (10YR 5/3) fine sandy loam with many, fine, distinct mottles of gray (N 6/0); weak, fine, granular structure; very friable; many fine and medium roots; strongly acid; clear, wavy boundary.

C2 12 to 24 inches, mottled gray (10YR 6/1), yellowish-brown (10YR 6/4), and dark yellowish-brown (10YR 4/4) loam; weak, fine, granular structure to structureless; very friable; few fine roots; strongly acid; clear, wavy boundary.

C3—24 to 35 inches, strong-brown (7.5YR 5/8) sandy loam with common, medium, distinct mottles of gray (10YR 6/1); structureless to weak, fine, granular structure; very friable; strongly acid; clear, wavy boundary.

C4g—35 to 50 inches, gray (10YR 6/1) sandy loam with few, fine, distinct mottles of yellowish brown (10YR 5/4); structureless; very friable; strongly acid.

The A1 horion ranges from fine sandy loam to silt loam. The C horizon ranges from loam to sandy loam.

MASHULAVILLE SERIES

The soils of the Mashulaville series are in areas that range from level to depressional. Slopes range from 0 to 2 percent. These soils developed in material that is more than 15 percent sand coarser than very fine sand. A fragipan occurs in these soils, and in all horizons, the chroma of the matrix color is 2 or less.

The Mashulaville soils are adjacent to Pheba and Stough soils, which also have a fragipan. Mashulaville soils are not bisequal, but the Pheba soils are. Also in the upper 10 inches of the B horizon, the Mashulaville soils do not have a matrix color with a chroma of 3 or more nor mottles with a chroma of less than 2. Mashulaville soils are more poorly drained than Stough soils, which have a clay-enriched B horizon that has mottles with a chroma of 2 or less.

Profile of Mashulaville silt loam on a slope of 1 percent in a wooded area, 3¼ miles north of Tylertown, 25 feet east of State Route 27 (SW¼SW¼ sec. 5, T. 2 N., R. 11 E.):

A1—0 to 3 inches, very dark gray (10YR 3/1) silt loam; weak, fine, granular structure; very friable; many fine roots; many fine root and worm holes; very strongly acid; abrupt, smooth boundary.

A21g 3 to 7 inches, grayish-brown (2.5Y 5/2) silt loam; weak, fine, granular structure; very friable; many fine roots; many fine root and worm holes; many, fine and medium, brown and black concretions; very strongly acid; clear, wavy boundary.

A22xg—7 to 15 inches, light brownish-gray (2.5Y 6/2) silt loam containing much sand; common, medium, distinct mottles of yellowish brown (10YR 5/6); weak, fine and medium, subangular blocky structure; friable, slightly brittle and compact; many fine roots; many, fine and medium, brown and black concretions; many fine voids; very strongly acid; clear, wavy boundary.

A22xg&Bxg—15 to 19 inches, light brownish-gray (2.5Y 6/2) silt loam with common, medium, distinct mottles of yellowish brown (10YR 5/6); weak, medium, platy structure; friable, slightly brittle and compact; few fine roots; many, fine, medium and coarse, brown and black concretions; common fine vesicules; few clay films on ped faces; very strongly acid; clear, wavy boundary.

Bx1g—19 to 28 inches, gray (10YR 6/1) loam with common, medium, distinct mottles of brownish yellow (10YR 6/6) and faint light brownish gray (2.5Y 6/2); moderate, medium, platy structure breaking to subangular blocky structure; firm, compact and brittle; common, medium and coarse, brown and black concretions; patchy clay films; gray seams filled with sandy clay loam; very strongly acid; clear, wavy boundary.

Bx2g—28 to 46 inches, mottled gray (10YR 6/1), strong-brown (7.5YR 5/8), and olive-yellow (2.5Y 6/6) loam to sandy loam; weak, fine and medium, subangular blocky structure; firm, compact and brittle; common, fine and coarse, brown and black concretions; very strongly acid.

The A horizon ranges from 16 to 24 inches in thickness. It is silt loam and generally contains much sand. The A1 horizon is very dark gray, and the A2 horizon is light brownish gray to gray. The Bx horizon ranges from gray to gray mottled with shades of brown. The concretions in the profile vary in size and in number.

MYATT SERIES

In the Myatt series are soils in areas that range from nearly level to depressional. Slopes range from 0 to 2 percent. These soils lack a fragipan but have a grayish, clay-enriched B horizon and are saturated with water for long periods.

Myatt soils are adjacent to Stough and Wehadkee soils. Myatt soils are more poorly drained than the Stough soils, which have a fragipan. In the Myatt soils a B horizon has developed, but not in the more poorly drained Wehadkee soils.

Profile of Myatt loam on a slope of 1 percent in a native pasture, 1¼ miles southeast of Lexie, one-half mile east of McGee Creek and 50 feet north of private road (SW¼SE¼ sec. 11, T. 1 N., R. 10 E.):

A1—0 to 2 inches, dark grayish-brown (10YR 4/2) loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; abrupt, wavy boundary.

A2g—2 to 12 inches, light brownish-gray (2.5Y 6/2) loam with many, medium, distinct mottles of yellowish brown (10YR 5/8); weak platy structure; friable; many fine roots; very strongly acid; gradual, wavy boundary.

B1g—12 to 20 inches, light brownish-gray (2.5Y 6/2) loam with many, medium, distinct mottles of yellowish brown (10YR 5/8); weak, fine and medium, subangular blocky structure; friable; few fine roots; few, fine, black and brown concretions; very strongly acid; gradual, wavy boundary.

B21tg—20 to 32 inches, light brownish-gray (2.5Y 6/2) heavy loam containing 16 percent more clay than the horizon above; many, medium, distinct mottles of yellowish brown (10YR 5/8); shows an old root channel filled with light brownish-gray (2.5Y 6/2) material from the A2g horizon; moderate, medium, prismatic structure breaking to moderate, medium, subangular blocky structure; firm; few, fine and medium, black and brown concretions; sand grains bridged with clay; patchy clay films on ped faces; very strongly acid; clear, wavy boundary.

B22tg—32 to 46 inches, light brownish-gray (2.5YR 6/2) loam with many, medium, distinct mottles of yellowish brown (10YR 5/8); peds coated with gray (10YR 5/1) and light brownish gray (2.5Y 6/2); clay films are evident on peds; moderate, coarse, subangular blocky structure; friable to firm; many, fine, brown and black concretions; thin fine sandy loam seams; very strongly acid; clear, wavy boundary.

B3g—46 to 54 inches, gray (10YR 6/1) sandy loam with many, medium, distinct mottles of yellowish brown (10YR 5/8); weak, fine and medium, subangular blocky structure; friable; few, fine and medium quartz pebbles; few brown and black concretions; very strongly acid.

The A horizon ranges from dark grayish brown to gray in color and from silt loam, or loam, to fine sandy loam. The B horizon is gleyed, gray to white loam, sandy clay loam, light clay loam, or sandy loam.

OCHLOCKONEE SERIES

The Ochlockonee series consists of soils on flood plains that have slopes of 0 to 2 percent. These soils developed in loamy alluvium that is less than 18 percent clay. They do not have a B horizon. Mottles with a chroma of 2 or less do not occur above a depth of 30 inches.

The Ochlockonee soils are adjacent to the Iuka and Mantachie soils. Unlike the Iuka soils, Ochlockonee soils do not have mottles with a chroma of 2 or less above a depth of 30 inches. They are not so wet as the Mantachie soils, which have distinct mottles with a chroma of 2 or less at a depth of 5 to 18 inches.

Profile of Ochlockonee loam to silt loam on a slope of 1 percent in a hayfield one-eighth mile east of McGee Creek Baptist Church, 100 yards south of paved road, and 100 feet east of McGee Creek (SW¼SE¼ sec. 27, T. 4 N., R. 11 E.):

A11—0 to 4 inches, very dark grayish-brown (10YR 3/2) loam to silt loam containing much sand; weak, fine, granular structure; very friable; many fine and medium roots; strongly acid; clear, wavy boundary.

A12—4 to 11 inches, very dark grayish-brown (10YR 3/2) and pale-brown (10YR 6/3) loam; weak, fine, granular structure; very friable; many fine and medium roots; strongly acid; clear, wavy boundary.

C1—11 to 18 inches, dark yellowish-brown (10YR 4/4) loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

C2—18 to 31 inches, strong-brown (7.5YR 5/6) loam; weak, fine, granular structure; friable; few fine roots; strongly acid; clear, wavy boundary.

C3—31 to 40 inches, yellowish-brown (10YR 5/6) sandy loam with many, medium, faint mottles of dark yellowish brown (10YR 4/4) and pale brown (10YR 6/3); weak, fine, granular structure; very friable; strongly acid; clear, wavy boundary.

C4 40 to 54 inches, mottled strong-brown (7.5YR 5/6), yellowish-brown (10YR 5/6), and light-gray (10YR 7/1) loam; weak, fine, granular structure to structureless; friable; strongly acid.

The A1 horizon is loam, silt loam, or sandy loam. It ranges from very dark gray to very dark grayish brown. The C horizon is loam or sandy loam.

ORA SERIES

The soils of the Ora series are on broad ridges that have slopes of 2 to 12 percent. These soils have a fragipan and a yellowish-red, clay-enriched B horizon that contains more clay in the upper part than in the lower. Mottles with a chroma of 2 or less do not occur in the upper 20 inches of the B horizon.

Ora soils are adjacent to the Ruston and Savannah soils. The fragipan in the Ora soils is weaker than that in the Savannah soils, but Ruston soils do not have a fragipan. The B horizon of the Ora soils is not dominantly yellowish brown like that in the Savannah soils, and it does not have such a uniform content of clay.

Profile of Ora loam on a slope of 3 percent in a pine plantation, one-fourth mile southwest of the Mesa Baptist Church, and 300 feet south of paved road (NW¼NW¼ sec. 16, T. 2 N., R. 10 E.) :

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) loam; weak, fine, granular structure; very friable; many fine and medium roots; strongly acid; clear, wavy boundary.

B2t—5 to 25 inches, yellowish-red (5YR 5/8) light sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; thin patchy clay films on ped faces; strongly acid; clear, wavy boundary.

Bx1—25 to 31 inches, mottled yellowish-red (5YR 5/8), strong-brown (7.5YR 5/8), and light-gray (10YR 7/2) loam to sandy loam; moderate, medium, angular blocky and subangular blocky structure; firm, compact and brittle; manganese coatings on ped faces; few fine manganese concretions; patchy clay films on ped faces; sand grains coated and bridged with clay; cracks filled with gray material; strongly acid; clear, wavy boundary.

Bx2—31 to 40 inches, red (10R 4/6) sandy loam with many, coarse, prominent mottles of yellowish brown (10YR 5/6) and light gray (10YR 7/1) ; cracks filled with gray material; moderate, medium, angular blocky and subangular blocky structure; firm, compact and brittle; clay films on ped faces; sand grains bridged with clay; strongly acid; clear, wavy boundary.

B3—40 to 60 inches, red (10R 4/6) heavy sandy loam with few, fine, prominent mottles of yellowish brown (10YR 5/6) ; pockets of white (10YR 8/1) sand; cracks filled with gray material; structureless; loose; few fine pebbles; strongly acid.

The A horizon ranges from very dark grayish brown to brown. The B2t horizon ranges from yellowish red to strong brown in color and from light sandy clay loam to sandy loam in texture. The B3 horizon ranges from red to yellowish red in most places. In some places it is light clay loam instead of heavy sandy loam.

PHEBA SERIES

The soils of the Pheba series are on ridges that have slopes of 0 to 5 percent. These soils have a bisequal profile and a fragipan. In the upper 10 inches of the B horizon, there are mottles with a chroma of 2 or less but few, if any, clay films.

Pheba soils are adjacent to the Ora and Savannah soils, which have a fragipan but are not bisequal. The mottles with a chroma of 2 or less that occur in the upper 10 inches of the clay-enriched B horizon of the Pheba soils are absent in the Ora and Savannah soils.

Profile of Pheba silt loam on a slope of 1 percent in a vacant lot in the southern part of Tylertown (SE¼SE¼ sec. 25, T. 2 N., R. 10 E.) :

A1—0 to 7 inches, very dark grayish-brown (10YR 3/2) silt loam containing a large amount of sand; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B1—7 to 11 inches, pale-brown (10YR 6/3) silt loam containing a large amount of sand; few, fine, faint mottles of brownish yellow (10YR 6/6) ; weak, fine, granular and subangular blocky structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B2—11 to 16 inches, yellowish-brown (10YR 5/4) silt loam containing a large amount of sand; few, fine, faint mottles of light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) ; weak, fine and medium, subangular blocky structure; friable; few fine roots; few fine concretions that are soft and brown; strongly acid; clear, wavy boundary.

Bx&A'2x—16 to 28 inches, mottled yellowish-brown (10YR 5/6), light-gray (10YR 7/1), pale-brown (10YR 6/3), and brownish-yellow (10YR 6/6) loam; moderate, fine and medium, subangular blocky structure; slightly firm, compact and brittle; few fine concretions that are soft and brown; sand grains bridged with clay; strongly acid; clear, wavy boundary.

B'x—28 to 38 inches, mottled yellowish-brown (10YR 5/4), light-gray (10YR 7/1), and brownish-yellow (10YR 6/6) light clay loam; moderate, medium, subangular blocky structure; slightly firm, compact and brittle; few fine concretions that are soft and brown; clay films on ped faces; sand grains bridged with clay; strongly acid; clear, wavy boundary.

B'3—38 to 50 inches, yellowish-brown (10YR 5/4) loam to sandy loam with few, fine, distinct mottles of light gray (10YR 7/1) ; weak, fine, granular and subangular blocky structure; friable; sand grains coated and bridged with clay; common fine pebbles; strongly acid.

The A horizon ranges from very dark grayish brown to very dark gray. Its texture ranges from loam to silt loam containing a large amount of sand. The B2 horizon ranges from silt loam to loam. The matrix color of the B2 horizon ranges from yellowish brown to brownish yellow. Mottles in the B2 horizon that have a chroma of 2 range from few to many. The fragipan consists of mottled yellow, brown, and gray loam to light clay loam that is underlain by loam to sandy loam.

PRENTISS SERIES

The soils of the Prentiss series are on broad flats. Slopes range from 0 to 5 percent. These soils have a fragipan and, above it, a yellowish-brown, clay-enriched horizon that is less than 18 percent clay. Mottles with a chroma of 2 or less do not occur in the upper 10 inches of the clay-enriched horizon.

The Prentiss soils are adjacent to the Cahaba and Stough soils. The clay-enriched horizon of the Prentiss soils contains less than the 18 to 35 percent clay that occurs in the corresponding horizon of the Cahaba soils, which is not underlain by a fragipan. Unlike the Stough soils, Prentiss soils have no mottles with a chroma of 2 or less in the upper 10 inches of the clay-enriched horizon.

Profile of Prentiss fine sandy loam on a slope of 1 percent in a hayfield, 2 miles south of Lexie, 660 yards east of Gulf, Mobile and Ohio Railroad, and 50 feet north of gravel road (SE¼SE¼ sec. 15, T. 1 N., R. 10 E.) :

A1—0 to 3 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A2—3 to 7 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—7 to 10 inches, mixed yellowish-brown (10YR 5/6) and dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B21t—10 to 20 inches, yellowish-brown (10YR 5/6) light loam; weak, fine, subangular blocky structure; friable; many fine roots; few, medium, brown and black concretions; sand grains bridged with clay; strongly acid; clear, wavy boundary.

B22t—20 to 23 inches, yellowish-brown (10YR 5/4 and 10YR 5/8) heavy sandy loam; weak, fine, subangular blocky structure; friable; few fine roots; common, medium, brown and black concretions; sand grains bridged with clay; strongly acid; clear, wavy boundary.

Bx1—23 to 30 inches, mottled yellowish-brown (10YR 5/4 to 10YR 5/8), light-gray (10YR 7/1), and strong-brown (7.5YR 5/8) fine sandy loam; weak, fine and medium, subangular blocky structure; firm, slightly compact and brittle; sand grains bridged with clay; many, fine and medium, brown and black, soft concretions; strongly acid; clear, wavy boundary.

Bx2—30 to 40 inches, mottled yellowish-brown (10YR 5/4), light-gray (10YR 7/1), and brownish-yellow (10YR

6/8) sandy loam; weak, fine, subangular blocky structure; friable or firm, slightly compact and brittle; sand grains bridged with clay; common medium manganese coatings and concretions of black (10YR 2/1); many, fine and medium, soft concretions of manganese; strongly acid; clear, wavy boundary.

C—40 to 54 inches, mottled very pale brown (10YR 7/4), yellowish-brown (10YR 5/4), light-gray (10YR 7/1), and brownish-yellow (10YR 6/8) loamy sand to sand; structureless; very friable; few fine concretions of manganese; strongly acid.

The A horizon ranges from very dark grayish brown to brown in color and from loam to fine sandy loam in texture. The B2t horizon ranges from yellowish brown or dark yellowish brown to strong brown. The fragipan is at a depth of 19 to 24 inches. The C horizon, generally at a depth of 40 to 60 inches, ranges from sandy loam to sand.

PROVIDENCE SERIES

The soils of the Providence series developed in a thin silty mantle and underlying loamy material on slopes of 2 to 8 percent. These soils have a B2 horizon that shows clay films on its peds. It is underlain by a fragipan in which the content of sand increases as depth increases.

The Providence soils are adjacent to the Brookhaven and Bude soils, which have a bisequal profile. Providence soils have a thinner A horizon than that in the Brookhaven soils and lack a distinct A2 horizon. Unlike the Bude soils, Providence soils do not have mottles with a chroma of 2 or less in the upper part of the B horizon.

Profile of Providence silt loam on a slope of 3 percent in a pasture one-fourth mile south of Lawrence County line, 2¾ miles west of Pike County line, on east side of gravel road (NE¼SE¼ sec. 5, T. 4 N., R. 10 E.):

Ap—0 to 4 inches, dark-brown (10YR 3/3) silt loam; weak, fine granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

BA—4 to 8 inches, mixed strong-brown (7.5YR 5/6), dark grayish-brown (10YR 4/2), and dark-brown (10YR 3/3) silt loam; weak, fine, granular and subangular blocky structure; friable; many fine roots; many worm castings; strongly acid; clear, wavy boundary.

B21t—8 to 15 inches, mixed dark-brown (7.5YR 4/4) and strong-brown (7.5YR 5/6) light silty clay loam; moderate, medium, subangular blocky structure; friable; few fine roots; worm castings and old root channels filled with material from the Ap horizon; patchy clay films; strongly acid; clear, wavy boundary.

B22t—15 to 19 inches, strong-brown (7.5YR 5/6) silty clay loam with few, fine, distinct mottles of pale brown (10YR 6/3); moderate, medium, subangular and angular blocky structure; friable; patchy clay films on ped faces; few, fine, soft concretions of black and brown; fine, thin, black coatings; strongly acid; clear, wavy boundary.

Bx&A'2x—19 to 36 inches, mottled strong-brown (7.5YR 5/6), yellowish-brown (10YR 5/4), brown (10YR 5/3), light-gray (10YR 7/2), and very pale brown (10YR 7/4) silt loam; moderate, medium, subangular and angular blocky structure; firm, slightly compact and brittle; common medium concretions of brown and black; many fine voids; patchy clay films on ped faces; peds coated with light-gray (10YR 7/1) silt; strongly acid; clear, wavy boundary.

IIBx1—36 to 40 inches, mottled yellowish-red (5YR 4/8), light-gray (10YR 6/1), and brownish-yellow (10YR 6/8) loam; moderate, medium, platy structure and moderate, medium, subangular blocky structure; firm, compact and brittle; peds coated with light-gray (10YR 7/2) silt; common coarse concretions of black and brown; few fine voids; patchy clay films; cracks filled with gray silt loam; strongly acid; gradual, smooth boundary.

IIBx2—40 to 60 inches, mottled red (2.5YR 4/8), brownish-yellow (10YR 6/8), and light-gray (10YR 6/1) sandy clay loam; moderate, medium, subangular blocky structure; firm, compact and brittle; cracks filled with light-gray (10YR 7/2) silt loam; common fine voids; patchy clay films; strongly acid.

The A horizon ranges from dark brown to very dark grayish brown. In places the BA horizon is absent and a B1 horizon may be present. The B21t and B22t horizons range from strong brown or dark brown to yellowish red in color and from heavy silt loam to silty clay loam in texture. The fragipan is mottled with shades of brown, yellow, red, and gray. It is silt loam in the upper part, and grades from sandy clay loam to heavy loam in the lower part. At a depth of 24 to 36 inches is sandy clay loam or clay loam mottled with shades of red, yellow, brown, and gray. Cracks begin in the upper part of the fragipan and continue through the profile.

RUMFORD SERIES

The soils of the Rumford series are on slopes of 0 to 2 percent. These soils are characterized by a fine sandy loam surface layer, an absence of mottles with a chroma of 2 or less in the upper 20 inches of the profile, a thin B horizon that is less than 18 percent clay, and a solum that is 40 inches or less thick.

Rumford soils are adjacent to the Cahaba and Prentiss soils. The B horizon of the Rumford soils is much thinner than that of Cahaba soils. Rumford soils are similar to the Prentiss soils in texture, but they lack a fragipan.

Profile of Rumford fine sandy loam on a slope of 2 percent in a wooded area 1½ miles north of the Louisiana State line, ½ mile west of the Bogue Chitto River, 2¾ miles east of the Pike County line, and ¼ mile north of paved road (NE¼NE¼ sec. 29, T. 1 N., R. 10 E.):

A1—0 to 6 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—6 to 10 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B2t—10 to 24 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, granular and subangular blocky structure; very friable; sand grains bridged with clay; strongly acid; abrupt, smooth boundary.

C—24 to 50 inches, very pale brown (10YR 7/3) loamy sand; structureless; loose; strongly acid.

The A horizon ranges from very dark grayish brown to brown in color and from fine sandy loam to loamy fine sand in texture. The B horizon ranges from yellowish brown or strong brown to yellowish red in color and from fine sandy loam to sandy loam in texture. The C horizon ranges from loamy sand to fine sandy loam in texture and from very pale brown to strong brown in color.

RUSTON SERIES

The soils of the Ruston series developed in sandy material on slopes of 0 to 40 percent. These soils are characterized by a fine sandy loam surface layer, an absence of mottles with a chroma of 2 or less within 20 inches of the surface, and the presence of a clay-enriched B horizon about 24 inches thick.

The Ruston soils are adjacent to the Ora and Saffell soils on the more nearly level slopes but are adjacent to the Guin and Lucy soils on steep slopes. The Ruston soils lack the fragipan that occurs in the Ora soils below a red

clay-enriched upper B horizon. They are similar to the Saffell soils in color but contain less gravel throughout the profile. The presence of a B horizon and less gravel throughout the profile distinguishes the Ruston soils from the Guin. The A horizon of Ruston soils is much thinner than that of Lucy soils and is commonly fine sandy loam instead of loamy sand.

Profile of Ruston fine sandy loam on a slope of 3 percent in a pasture 1 mile northwest of Dexter (NE¼NW¼ sec. 4, T. 1 N., R. 12 E.):

Ap—0 to 5 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B21t—5 to 12 inches, yellowish-red (5YR 4/6) heavy fine sandy loam to loam; weak, fine, granular and subangular blocky structure; very friable; sand grains bridged with clay; many fine roots; strongly acid; clear, wavy boundary.

B22t—12 to 28 inches, yellowish-red (5YR 4/6) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable; few fine roots; sand grains bridged with clay; few thin clay films on peds; strongly acid; gradual, wavy boundary.

B3t&A'2—28 to 43 inches, yellowish-red (5YR 5/8) sandy loam with common, coarse, distinct splotches of light yellowish brown (10YR 6/4); weak, medium and coarse, subangular blocky structure; very friable; few medium-sized pebbles; sand grains bridged with clay; 10 percent of horizon is A'2, which occurs in a scattered pattern and is brittle; few black coatings; strongly acid; gradual, wavy boundary.

B't—43 to 60 inches, red (2.5YR 4/6) sandy clay loam; moderate, medium and coarse, subangular blocky structure; friable; patchy clay films; continuous clay coatings; sand grains bridged with clay; strongly acid.

The A horizon is very dark grayish-brown to dark grayish-brown loam, fine sandy loam, or loamy sand. The B2t horizon ranges from strong-brown to yellowish-red heavy fine sandy loam to sandy clay loam. In some places the B3t&A'2 horizon and the B't horizon are sandy loam in which there is no gravel or varying amounts.

SAFFELL SERIES

The soils of the Saffell series developed in gravelly material on slopes of 2 to 12 percent. They have a high content of gravel throughout the profile and a B2 horizon that is 18 to 35 percent clay. Mottles with a chroma of 2 or less do not occur above a depth of 20 inches.

The Saffell soils are adjacent to the Ora and Ruston soils and contain more gravel than those soils. Saffell soils lack the fragipan that underlies the yellowish-red, clay-enriched horizon of the Ora soils.

Profile of Saffell gravelly fine sandy loam on a slope of 7 percent in a cornfield 1½ miles east of Sartinville, on the east side of gravel road (NW¼NW¼ sec. 10, T. 4 N., R. 11 E.):

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) gravelly fine sandy loam; weak, fine, granular structure; friable; 10 to 15 percent gravel; strongly acid; clear, smooth boundary.

B1—5 to 11 inches, strong-brown (7.5YR 5/6) gravelly sandy loam with few, fine, distinct, dark grayish-brown (10YR 4/2) mottles; weak, fine, subangular blocky structure; friable; 15 to 20 percent gravel; strongly acid; clear, smooth boundary.

B2t—11 to 21 inches, yellowish-red (5YR 5/6) gravelly sandy clay loam; weak, fine and medium, subangular blocky structure; friable; patchy clay films on ped faces; sand grains bridged with clay; 20 to 30 percent gravel; strongly acid; gradual, smooth boundary.

B3—21 to 27 inches, strong-brown (7.5YR 5/6) gravelly sandy loam with white (10YR 8/2) pockets of sand; weak, fine, subangular blocky structure; friable; 30 to 50 percent gravel; sand grains bridged with clay; strongly acid; gradual, smooth boundary.

C—27 to 56 inches, yellowish-red (5YR 5/6) gravelly loamy sand; structureless; very friable; 60 to 75 percent gravel.

The B horizon ranges from gravelly fine sandy loam to gravelly sandy clay loam.

SAVANNAH SERIES

The soils of the Savannah series developed in loamy material that is 18 to 35 percent clay. Slopes range from 0 to 8 percent. These soils have a yellowish-brown, clay-enriched horizon underlain by a fragipan. Mottles with a chroma of 2 or less do not occur in the upper 10 inches of the B horizon.

The Savannah soils are adjacent to Ora and Ruston soils. Both the Savannah and Ora soils have a fragipan, but in the horizon above the fragipan of the Savannah soils, there is not a large increase in clay. Savannah soils are not so red as the Ruston soils, which lack a fragipan.

Profile of Savannah silt loam on a slope of 3 percent in a pasture 5 miles northeast of Tylertown, one-fourth mile east of Knoxo Methodist Church on the south side of gravel road (SW¼SW¼ sec. 13, T. 2 N., R. 11 E.):

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) and dark grayish-brown (10YR 4/2) silt loam containing much sand; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—7 to 11 inches, mixed yellowish-brown (10YR 5/4), brown (10YR 4/3), and dark grayish-brown (10YR 4/2) silt loam containing much sand; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B2t—11 to 23 inches, yellowish-brown (10YR 5/6) loam; moderate, fine and medium, subangular blocky structure; friable; few, fine, soft concretions of brown; thin patchy clay films; sand grains bridged with clay; strongly acid; clear, wavy boundary.

Bx1—23 to 31 inches, mottled yellowish-brown (10YR 5/6), light-gray (10YR 7/1), and dark-brown (7.5YR 4/4) loam; moderate, medium, subangular blocky structure; firm, compact and brittle; few, fine, soft concretions of brown; continuous clay films on ped faces; strongly acid; clear, wavy boundary.

Bx2—31 to 53 inches, mottled yellowish-brown (10YR 5/6), light-gray (10YR 7/1), dark-brown (7.5YR 4/4), and yellowish-red (5YR 4/6) loam; moderate, medium, subangular blocky structure; firm, compact and brittle; clay films on ped faces; strongly acid; clear, wavy boundary.

Bx3—53 to 65 inches, mottled red (2.5YR 4/6), yellowish-red (5YR 4/6), light-gray (10YR 7/1), and yellowish-brown (10YR 5/4-5/6) sandy clay loam; moderate, medium, subangular blocky structure; firm, compact and brittle; clay films on ped faces; sand grains bridged with clay; strongly acid.

The A horizon ranges from very dark gray or dark grayish brown to very dark grayish brown. In texture it ranges from loam to silt loam containing much sand. The B2t horizon ranges from yellowish brown to strong brown in color, and in texture from loam to heavy silt loam containing much sand or to sandy clay loam. Depth to the fragipan ranges from 18 to 27 inches.

SHUBUTA SERIES

The soils of the Shubuta series are on slopes of 5 to 17 percent and have a loamy surface layer. Mottles with a

chroma of 2 or less occur between 10 and 20 inches from the top of the yellowish-red, clay-enriched B horizon.

The Shubuta soils commonly are adjacent to the Boswell, Ora, and Ruston soils. Shubuta soils are less plastic and sticky than the Boswell soils and, unlike them, have platy structure in the lower B horizon. In contrast to the Ora soils, the Shubuta soils are more clayey and do not have a fragipan. Shubuta soils are also more clayey than the Ruston soils, which lack mottles with a chroma of 2 or less.

Profile of Shubuta fine sandy loam on a slope of 6 percent in a pasture three-fourths mile north of Knoxo Methodist Church on east side of the Fernwood, Columbia and Gulf Railroad tracks (SE¼SE¼ sec. 13, T. 2 N., R. 11 E.) :

Ap—0 to 3 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; friable; few fine roots; few iron nodules ½ inch in diameter; very strongly acid; clear, wavy boundary.

A2—3 to 5 inches, yellowish-brown (10YR 5/4) loam; weak, fine, granular structure; friable; few fine roots; few iron nodules ½ inch in diameter; very strongly acid; clear, wavy boundary.

B21t—5 to 12 inches, yellowish-red (5YR 5/6) silty clay with few, fine, faint mottles of red (2.5YR 4/8) ; strong, fine and medium, angular blocky structure; firm; clay films on ped faces; few fine roots; very strongly acid; clear, wavy boundary.

B22t—12 to 22 inches, yellowish-red (5YR 5/6) heavy silty clay loam with common, medium, distinct mottles of reddish yellow (7.5YR 6/6) and brownish yellow (10YR 6/6) ; strong, fine and medium, angular blocky structure; firm; clay films on ped faces; very strongly acid; abrupt, smooth boundary.

B23t—22 to 32 inches, mottled weak-red (10R 4/4), dusky-red (10R 3/4), yellowish-red (5YR 4/6), yellowish-brown (10YR 5/4), and light-gray (10YR 7/2) clay loam; strong, medium, platy structure that breaks along horizontal bedding planes to strong, medium and coarse, angular blocky structure; firm; clay films around peds; extremely acid; clear, wavy boundary.

B3—32 to 60 inches, mottled red (2.5YR 4/8), yellowish-red (5YR 4/8), light gray (10YR 7/1), and brownish-yellow (10YR 6/8) clay loam; horizontally bedded and stratified with thin lenses of sand; strong, medium, platy structure; firm; extremely acid; clear, wavy boundary.

The A horizon ranges from dark grayish brown to very dark gray in color and from sandy loam to fine sandy loam in texture. The B2t horizon ranges from yellowish red to red and is generally mottled in the lower part. It is silty clay loam, clay loam, or silty clay. The B3 horizon ranges from clay to strata of clay loam or sandy clay loam to sandy loam. This horizon is mottled with shades of gray, red, yellow, and brown.

STOUGH SERIES

In the Stough series are soils on slopes of 0 to 3 percent. These soils have a fragipan, a clay-enriched upper B horizon that is less than 18 percent clay, and mottles with a chroma of 2 or less in the upper 10 inches of the B horizon.

The Stough soils are adjacent to the Cahaba and Prentiss soils. Stough soils are not so well drained as Cahaba soils, which lack a fragipan and have a B horizon that is 18 to 35 percent clay. Stough soils are similar to the Prentiss soils in texture and other characteristics but have mottles in the upper 10 inches of the B horizon, whereas mottles in the Prentiss soils are between 10 and 20 inches from the top of the B horizon.

Profile of Stough fine sandy loam on a slope of 1 percent in a pasture 1¼ miles southeast of Lexie, one-half mile east of McGee Creek, north of private road (SW¼ SE¼ sec. 11, T. 1 N., R. 10 E.) :

A1—0 to 4 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A2—4 to 8 inches, light yellowish-brown (10YR 6/4) fine sandy loam mixed with very dark grayish-brown (10YR 3/2) material from the A1 horizon; weak, fine, granular structure; very friable; few medium soft concretions of brown and black; many fine roots; strongly acid; clear, wavy boundary.

B2t—8 to 16 inches, light yellowish-brown (2.5Y 6/4) loam with few, fine, faint mottles of pale brown (10YR 6/3) and light brownish gray (10YR 6/2) ; weak, fine, subangular blocky structure; sand grains bridged with clay; friable; few fine roots; few, fine and medium, soft concretions of brown and black; few fine pebbles; strongly acid; clear, wavy boundary.

Bx1—16 to 29 inches, mottled light yellowish-brown (10YR 6/4), light-gray (10YR 6/1), and yellowish-brown (10YR 5/4 and 5/8) fine sandy loam; weak, fine and medium, subangular blocky structure; sand grains bridged with clay; firm, slightly compact and brittle; common, fine and medium, black and brown concretions; common fine voids; strongly acid; clear, wavy boundary.

Bx2—29 to 40 inches, light-gray (10YR 7/1) fine sandy loam with many, medium, distinct mottles of strong brown (7.5YR 5/8) and yellowish brown (10YR 5/4) ; weak, fine and medium, subangular blocky structure; firm, compact and brittle; common, fine and medium, black concretions; strongly acid; clear, wavy boundary.

Bx3—40 to 54 inches, mottled light-gray (N 7/0), strong-brown (7.5YR 5/8), and brownish-yellow (10YR 6/6) fine sandy loam; weak, fine, granular and subangular blocky structure; firm, compact and brittle; many, fine to coarse, black and brown concretions and coats; strongly acid.

The A horizon ranges from very dark gray to dark grayish brown in color and from fine sandy loam to loam in texture. Above the fragipan the B horizon ranges from light yellowish brown to yellowish brown mottled with shades of gray. The texture of the B horizon is loam or fine sandy loam. The fragipan begins at a depth of 12 to 19 inches and ranges from loam to sandy loam.

WEHADKEE SERIES

The soils of the Wehadkee series developed in medium-textured alluvium that is 18 to 35 percent clay. These soils are on flood plains having slopes of 0 to 2 percent. They do not have a B horizon. Colors in the profile generally have a chroma of 2 or less. These soils are wet for long periods.

The Wehadkee soils commonly are adjacent to the Iuka, Mantachie, and Myatt soils. The Wehadkee soils are less well drained than Iuka soils, which lack mottles with a chroma of 2 or less to a depth of 18 inches. In the Mantachie soils depth to mottles with a chroma of 2 or less ranges from 5 to 18 inches. Wehadkee soils are similar to the Myatt soils in drainage, but they lack the B horizon that has clay films and moderate structure.

Profile of Wedhakee silt loam on a slope of 1 percent in a pasture 4½ miles south of Lexie, 1 mile north of Louisiana State line, and 100 feet east of State Route 27 (NE¼NW¼ sec. 34, T. 1 N., R. 10 E.) :

Ag—0 to 2 inches, light brownish-gray (10YR 6/2) silt loam; weak, fine, granular structure; friable; many fine roots; few fine pebbles; extremely acid; abrupt, smooth boundary.

C1g—2 to 11 inches, light-gray (10YR 7/2) loam; weak, fine, subangular blocky and platy structure; friable; many

fine and medium roots; few fine pebbles; root stains of dark brown (10YR 4/3); extremely acid; abrupt, smooth boundary.

C2g—11 to 20 inches, light-gray (10YR 7/1) sandy clay loam; weak, fine and medium, subangular blocky structure and thin platy structure; friable; few fine roots; few fine pebbles; few, small, black concretions; extremely acid; abrupt, smooth boundary.

C3g—20 to 48 inches, white (10YR 8/2) light clay loam; structureless; friable when moist, slightly sticky when wet; few fine roots; few fine pebbles; few, small, black concretions; extremely acid.

The A horizon ranges from light brownish-gray to very dark grayish-brown silt loam, loam, or fine sandy loam. The C horizon ranges from white to gray and may have few to common mottles. It ranges from a loam containing much sand to light clay loam. In places the profile is as much as 5 percent gravel.

General Nature of the Area

This section contains information for those not familiar with Walthall County. It describes the geology, physiography, and drainage, discusses the climate, and gives some facts about agriculture. The figures for population and the statistics on agriculture are mainly from reports of the U.S. Bureau of the Census.

Walthall County was created from parts of Pike and Marion Counties. The area was part of the territory originally occupied by the Chickasaw, Choctaw, and Natchez Indians. The first settlers were of English, Scotch, and Irish descent, and they came mainly from South Carolina and the New England States. One of their earliest settlements was Sartinville at the headwaters of McGee Creek. Tylertown, the county seat, was named for its founder, William Stanville Tyler.

The population of the county was 13,455 in 1920, 18,910 in 1940, and 13,512 in 1960. The population of Tylertown was 1,532 in 1960.

Geology, Physiography, and Drainage

The soils of Walthall County were derived from sedimentary sand, silt, and clay of the Coastal Plain. The geologic formations that appear at the surface are the Citronelle of the Pliocene epoch and the Hattiesburg and Catahoula of the Miocene epoch (*3*). Most of the county is underlain by the Citronelle formation, and most of the soils of the uplands formed in material from that formation. A few of the soils formed in a thin mantle of loess that covered the Citronelle formation. A few other soils formed from Hattiesburg clay, which lies immediately beneath the Citronelle formation and crops out on some of the lower slopes. In this county the Catahoula formation crops out on streambanks and forms the bed for most of the larger streams, but it does not contribute to the parent material of the soils. The soils along the larger streams formed from material that was transported and deposited by streams. Much of the alluvial material was washed from nearby uplands. It has changed but little since it was washed from the uplands.

Walthall County is a part of the Pearl River watershed. It occupies a plain that slopes gently to the south. The elevation ranges from 200 to 400 feet. Two broad, shallow valleys and numerous small drainageways dissect the county. The bottom lands consist of excessively drained to poorly drained loamy alluvium. Adjacent to them are bands of nearly level stream terraces occupied by loamy and excessively drained to poorly drained soils. The hills are occupied mostly by steep to very steep, sandy soils. On the ridges are nearly level to moderately sloping, sandy and silty soils.

The relief of Walthall County ranges from nearly level to very steep. The soils on bottom lands and terraces have slopes of 0 to 5 percent and make up about 30 percent of the county. The soils on ridges have slopes of 0 to 8 percent and make up about 42 percent of the county. The soils on the sides of hills and ridges have slopes of 8 to 40 percent and make up about 28 percent of the county.

This county is drained by McGee Creek and the Bogue Chitto River, the major streams in the county, and also by numerous small streams. McGee Creek drains about 80 percent of the county. It originates in the northeastern part of the county, flows southwestward, and empties into the Bogue Chitto River. Darbun, Stovall, Vernell, Union, Dry, Pope, and Collins Creeks drain into McGee Creek. The Bogue Chitto River crosses the southwestern corner of the county. Its tributaries are Carters, Leatherwood, Sweetwater, and Silver Creeks, which drain the western part of the county. Poosheapatope Creek, in the southeastern part of the county, flows southward and unites with the Bogue Chitto River in Louisiana. Hurricane, Sandy Hook, and Ten Mile Creeks, in the southeastern part of the county, flow eastward and empty into the Pearl River outside the county.

The surface drainage of Walthall County is approaching maturity, but there are still a few areas in the uplands that do not have channels to provide surface drainage. Floods occur on the flood plains of those streams, but the water does not stay on the land for a long period. Small areas of bottom lands, however, are under water for long periods. In those areas small dragline ditches and V- and W-type ditches are needed.

Climate [7]

The principal influences that determine the climate of Walthall County are the subtropical latitude, the huge land mass to the north, the proximity to the warm waters of the Gulf of Mexico, and the prevailing southerly winds. Data on temperature and precipitation for this county are given in table 9.

In summer, southerly winds bring moist, tropical air from the Gulf, but winds from the west or north occasionally bring hot, dry weather. Droughts occur if the dry weather lasts long enough. In winter, periods of moist, tropical air and of dry, polar air alternate. These changes sometimes cause rather extreme and sudden shifts in temperature, but cold spells are generally short. Ordinarily, snow falls in January once every 4 years, but it remains on the ground for only a short time.

Temperatures of 32° F. or lower occur on an average of 35 days in winter, and temperatures of 90° or higher ordinarily occur 95 to 100 days in summer. Temperatures of 20° or lower occur 7 out of every 10 years. The ground freezes occasionally, but not to a great depth, and it generally thaws rapidly.

[7] E. J. Saltsman, State climatologist, U.S. Weather Bureau.

TABLE 9.—*Temperature and precipitation data*

[Elevation 412 feet]

Month	Temperature [1]			Precipitation			
	Average	Absolute maximum	Absolute minimum	Average [1]	Driest year [1] (1954)	Wettest year [2] (1905)	Average snowfall
	°F	°F	°F	Inches	Inches	Inches	Inches
January	50.8	83	9	3.95	2.56	6.29	0.2
February	54.3	85	11	5.21	1.79	12.82	(3)
March	58.9	88	21	6.49	3.82	5.23	.1
April	66.4	91	30	4.88	1.83	14.59	0
May	73.2	102	40	4.83	3.02	6.73	0
June	79.4	103	48	5.86	4.30	2.24	0
July	80.8	100	60	5.68	4.71	7.91	0
August	80.6	104	54	4.50	.70	8.49	0
September	76.0	99	44	4.48	4.31	5.83	0
October	66.6	94	23	2.37	4.74	3.66	0
November	56.5	87	18	3.56	2.40	3.58	0
December	51.7	82	13	5.36	4.76	5.54	0
Year	66.3	104	9	57.17	38.94	82.91	.3

[1] Data for temperatures and average precipitation are from records kept at Tylertown for the period 1939–59, inclusive; data for the driest year are also from records kept at Tylertown, but for the period 1892–1959.

[2] Data are from records kept at Magnolia, Pike County, for the period 1892–1959.

[3] Trace.

Table 10 shows the probabilities of freezing temperatures on or after given dates in spring and on or before given dates in fall. On a clear, calm night, frost can form on vegetation when a temperature of 32° is registered in a sheltered area about 5 feet above the ground. Because frost or freezing temperature at ground level can adversely affect seed and vegetation, dates for threshold temperatures of 36° and 40° are included in table 10.

The relative humidity is 60 percent or higher 72 percent of the time, and 40 percent or lower only 8 percent of the time. In winter, when the temperature is below 50°, the relative humidity ranges from 50 to 79 about 50 percent of the time, and 80 to 100 about 40 percent of the time. In summer, when the temperature is 90° or higher, the relative humidity never exceeds 79, and it ranges from 50 to 79 for 48 percent of the time.

Moisture for the commonly grown crops is ample throughout the year. Fall is the driest season, and October is the driest month. Precipitation in winter and spring often comes in the form of prolonged rains, usually because warm air from the Gulf of Mexico has overridden a mass of cold air near the surface of the ground. In summer and early in fall, precipitation is in the form of thundershowers. These showers are generally widely scattered, and local droughts can occur as a result. In any month 3 inches or more of precipitation in 24 hours sometimes falls and causes local flash floods.

Thunderstorms are fairly frequent, but hailstones as large as three-quarters of an inch in diameter are uncommon. Tornadoes occur about once in 14 years. Gale-force winds (39 to 74 miles per hour) can be expected about once in 8 years. Hurricane-force winds can be expected about once in 60 years.

Agriculture

Early settlers in Walthall County found heavy growths of virgin forests, mainly pine trees, on the uplands and

TABLE 10.—*Probabilities of the last freezing temperatures in spring and the first in fall*

[All data from records at Tylertown for period 1939–59, inclusive. Data adjusted to account for years without freeze]

Probability	Dates for given probability at temperature of—				
	24° F.	28° F.	32° F.	36° F.	40° F.
Spring:					
1 year in 10 later than	February 13.	March 18.	April 3.	April 22.	May 1.
2 years in 10 later than	February 4.	March 10.	March 27.	April 15.	April 24.
5 years in 10 later than	January 19.	February 24.	March 13.	April 1.	April 10.
Fall:					
1 year in 10 earlier than	November 24.	November 4.	October 23.	October 15.	October 7.
2 years in 10 earlier than	December 1.	November 10.	October 29.	October 21.	October 13.
5 years in 10 earlier than	December 15.	November 22.	November 9.	November 1.	October 24.

hardwoods along the streams. Native grasses and canes also grew along the streams. The first settlers grew crops mostly for their own use.

Agricultural development has been gradual in this county. In 1920, about 61 percent of the county was in farms. By 1930, the acreage in farms had increased to about 70 percent of the county, and crops were harvested on 67,269 acres. By 1959, the acreage in farms had increased still further, to nearly 77 percent, but crops were harvested on only 38,097 acres.

The increase in the acreage in farms and the decrease in the acreage in crops were caused by a decrease in the acreage used for cotton and an increase in the acreage used for pasture. In 1959, cotton was grown on 7,313 acres, as contrasted to about 42,000 acres in 1930. The size of the average farm was 101.2 acres in 1959, as compared to 84 acres in 1954.

Dairying has increased in importance, and the number of beef cattle has increased steadily during the last 10 years. A total of 36,184 cattle and calves was reported in this county in 1959. Of this number, 11,629 were milk cows. The cattle are allowed to graze about 80 percent of the woodland in the county, either seasonally or continuously. Income from many of the farms in the county is derived from sales of beef cattle, timber, and oil; from sales of beef cattle, timber, and cotton; or from sales of dairy products and timber.

Glossary

Acidity. See Reaction, soil.

Aggregate, soil. Many fine particles held in a single mass or cluster, such as a clod, crumb, block, or prism.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity. The capacity of a soil to hold water in a form available to plants. Amount of moisture held in soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Claypan. A compact, slowly permeable soil horizon that contains more clay than the horizon above and below it. A claypan is commonly hard when dry and plastic or stiff when wet.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent; soil does not hold together in a mass.

Friable.—When moist, soil crushes easily under gentle pressure between thumb and forefinger, and can be pressed together into a lump.

Firm.—When moist, soil crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, soil is readily deformed by moderate pressure, but can be pressed into a lump; will form a wire when rolled between thumb and forefinger.

Sticky.—When wet, soil adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, soil is moderately resistant to pressure and is difficult to break between thumb and forefinger.

Soft.—When dry, soil breaks into powder or individual grains, under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Diversion, or diversion terrace. A ridge of earth built to divert runoff from its natural course and, thus, to protect areas downslope from the effects of such runoff.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic matter and clay that is rich in silt or very fine sand. The layer is seemingly cemented when dry, has a hard or very hard consistence, and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes and that differs in one or more ways from adjacent horizons in the same profile.

Leaching, soil. The removal of soluble materials from soils or other material by percolating water.

Loess. Geologic deposits of relatively uniform, fine material, mostly silt, that presumably was transported by wind.

Morphology, soil. The makeup of the soil, including the texture, structure, consistence, color, and other physical, mineralogical, and biological properties of the various horizons of the soil profile.

Mottled. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are these: *fine*, less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium*, ranging from 5 to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse*, more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Natural drainage. Refers to the conditions that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets.

Parent material, soil. The horizon of weathered rock or partly weathered soil material from which a soil has formed; the C horizon.

Permanent pasture. Pasture that is on the soil for a long time, in contrast to rotation pasture, which is on the soil for only 1 or 2 years because it is grown in rotation with other crops.

Permeability, soil. The quality of a soil horizon that enables water or air to move through it. Terms used to describe permeability are as follows: *very slow*, *slow*, *moderately slow*, *moderate*, *moderately rapid*, *rapid*, and *very rapid*.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material. See Horizon, soil.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values and in words as follows (*6*):

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Runoff (hydraulics). The part of the precipitation upon a drainage area that is discharged from the area in stream channels. The water that flows off the land surface without sinking in is called surface runoff.

Sand. As a soil separate, individual rock or mineral fragments 0.05 to 2.0 millimeters in diameter. Most sand grains consist of quartz, but they may be of any mineral composition. As a textural class, soil that is 85 percent or more sand and not more than 10 percent clay.

Silt. As a soil separate, individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of fine sand (0.05 millimeter). As a textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Solum, soil. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in a mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are *platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *angular blocky* (prism with sharp corners), *subangular blocky* (prisms with mostly rounded corners), and *granular* (granules relatively nonporous), *crumb* (similar to granular but very porous). Structureless soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; commonly, that part of the profile below plow depth.

Substratum. Any layer beneath the solum, or true soil.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Texture, soil. The relative proportion of sand, silt, and clay and clay particles in a mass of soil (see also Clay, Sand, and Silt). The basic textural classes, in order of increasing proportions of fine particles are: *Sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. A presumed fertile soil or soil material, ordinarily rich in organic matter, used to topdress roadbanks, parks, gardens, and lawns.

Upland (geologic). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowlands along rivers.

Literature Cited

(1) American Association of State Highway Officials.
1955. standard specifications for highway materials and methods of sampling and testing. Ed. 7, 2 v., illus. Washington, D.C.

(2) Baldwin, M., Kellogg, C. E., and Thorp, J.
1938. soil classification. U.S. Dept. Agr. Ybk. 1938: 978–1001.

(3) Mississippi Geological Society.
1945. geologic map of mississippi. Prepared in cooperation with Geol. Surv. U.S. Dept. of Int.

(4) Simonson, Roy W.
1962. soil classification in the united states. Sci. 137: 1027–1034.

(5) Thorp, J. and Smith, Guy D.
1949. higher categories of soil classification: order, suborder, and great soil group. Soil Sci. 67: 117–126.

(6) United States Department of Agriculture.
1951. soil survey manual. U.S. Dept. of Agr. Handbook 18, 503 pp., illus.

(7) ———.
1958. mississippi forests. For. Surv. Rel. 81, 52 pp., illus.

(8) ———.
1960. soil classification, a comprehensive system, 7th approximation. 265 pp., illus. [Supplement issued in March 1967]

(9) Waterways Experiment Station, Corps of Engineers.
1953. unified soil classification system. Tech. Memo. 3–357, 2 v. and appendix, illus.

GUIDE TO MAPPING UNITS

[For a full description of a mapping unit, read both the description of the mapping unit and the description of the soil series to which the mapping unit belongs.

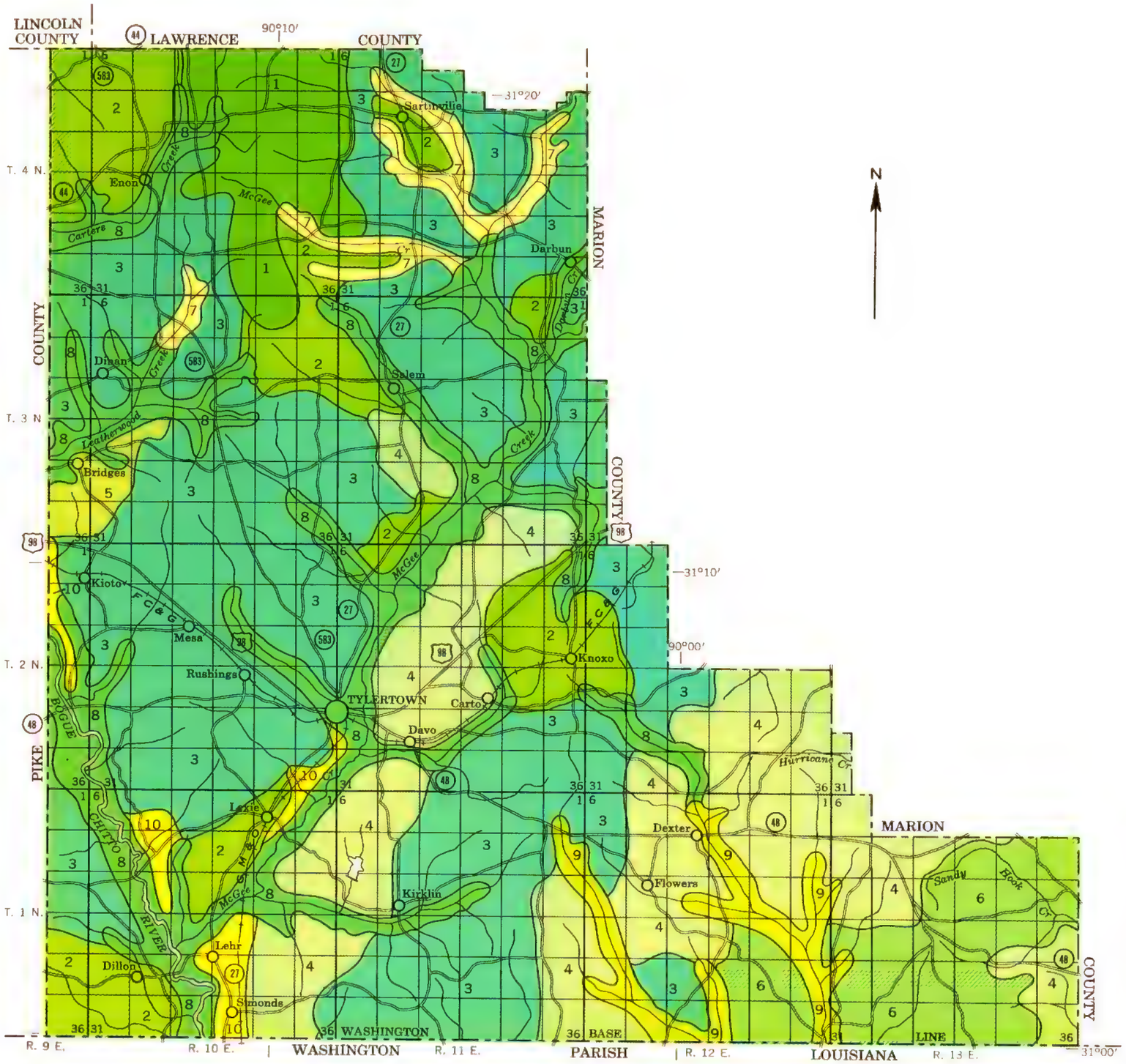
[See table 1, page 17, for the estimated yields of the soils; table 2, page 23, for the woodland suitability groups; and table 7, page 45, for approximate acreage and proportionate extent of the soils. For a discussion of woodland forage sites, see section beginning on page 18, and for information significant to engineering, see section beginning on page 27]

Map symbol	Mapping unit	Page	Capability unit		Woodland suitability group	Woodland forage site
			Symbol	Page	Number	Number
BhA	Brookhaven silt loam, 0 to 2 percent slopes	45	IIw-6	10	5	4
BhB	Brookhaven silt loam, 2 to 5 percent slopes	45	IIw-6	10	5	4
BhB2	Brookhaven silt loam, 2 to 5 percent slopes, eroded	46	IIw-6	10	5	4
Br	Bruno loamy sand	46	Vw-1	14	18	3
BuA	Bude silt loam, 0 to 2 percent slopes	46	IIIw-1	12	14	4
CaA	Cahaba fine sandy loam, 0 to 2 percent slopes	47	I-1	6	1	1
CaB	Cahaba fine sandy loam, 2 to 5 percent slopes	47	IIe-1	7	1	1
Cc	Cascilla silt loam	47	IIw-1	9	7	5
Co	Collins silt loam	47	IIw-2	9	7	5
Fa	Falaya silt loam	48	IIw-3	9	8	5
Fr	Frost silt loam	48	IVw-1	14	10	4
GgE	Guin gravelly fine sandy loam, 12 to 17 percent slopes	48	VIIs-1	16	17	2
CgF	Guin gravelly fine sandy loam, 17 to 40 percent slopes	48	VIIs-1	16	17	2
Gu	Gullied land	48	VIIe-1	15	19	4
Ma	Mantachie soils	49	IIw-4	9	12	3
Ms	Mashulaville silt loam	49	IVw-2	14	11	3
Mt	Myatt loam	50	IVw-3	14	10	3
Oc	Ochlockonee-Iuka soils	50	IIw-5	9	13	3
OrB	Ora loam, 2 to 5 percent slopes	50	IIe-2	7	6	1
OrB2	Ora loam, 2 to 5 percent slopes, eroded	50	IIe-2	7	6	1
OrB3	Ora loam, 2 to 5 percent slopes, severely eroded	51	IIIe-2	11	6	1
OrC2	Ora loam, 5 to 8 percent slopes, eroded	51	IIIe-1	10	6	1
OrC3	Ora loam, 5 to 8 percent slopes, severely eroded	52	IVe-2	12	6	1
OrD2	Ora loam, 8 to 12 percent slopes, eroded	52	IVe-1	12	6	2
PhB	Pheba silt loam, 0 to 5 percent slopes	52	IIIw-2	12	15	1
PrA	Prentiss fine sandy loam, 0 to 2 percent slopes	53	IIw-7	10	6	1
PrB	Prentiss fine sandy loam, 2 to 5 percent slopes	53	IIe-2	7	6	1
PvB2	Providence silt loam, 2 to 5 percent slopes, eroded	53	IIe-3	8	5	4
PvC2	Providence silt loam, 5 to 8 percent slopes, eroded	54	IIIe-3	11	5	4
RfA	Rumford fine sandy loam, 0 to 2 percent slopes	54	IIs-1	10	1	1
RlF	Ruston-Lucy complex, 17 to 40 percent slopes	57	VIIe-3	15	4	2
RuA	Ruston fine sandy loam, 0 to 2 percent slopes	54	I-1	6	1	1
RuB	Ruston fine sandy loam, 2 to 5 percent slopes	54	IIe-1	7	1	1
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded	54	IIe-1	7	1	1
RuC2	Ruston fine sandy loam, 5 to 8 percent slopes, eroded	55	IIIe-4	11	1	1
RuC3	Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded	55	IVe-4	13	1	1
RuD2	Ruston fine sandy loam, 8 to 12 percent slopes, eroded	55	IVe-3	13	1	2
RuD3	Ruston fine sandy loam, 8 to 17 percent slopes, severely eroded	55	VIIe-2	15	2	2
RuE2	Ruston fine sandy loam, 12 to 17 percent slopes, eroded	55	VIe-1	15	3	2
RuF	Ruston fine sandy loam, 17 to 40 percent slopes	56	VIIe-3	15	3	2
RuF2	Ruston fine sandy loam, 17 to 40 percent slopes, eroded	56	VIIe-3	15	3	2
SaC2	Saffell gravelly fine sandy loam, 2 to 8 percent slopes, eroded	57	IIIe-5	11	1	1
SaD2	Saffell gravelly fine sandy loam, 8 to 12 percent slopes, eroded	57	IVe-5	13	1	2
Sd	Sandy alluvial land	57	Vw-1	14	18	3
ShA	Savannah silt loam, 0 to 2 percent slopes	58	IIw-7	10	6	1
ShB2	Savannah silt loam, 2 to 5 percent slopes, eroded	58	IIe-2	7	6	1
ShC2	Savannah silt loam, 5 to 8 percent slopes, eroded	58	IIIe-1	10	6	1
StC2	Shubuta and Boswell soils, 5 to 8 percent slopes, eroded	58	IVe-6	13	16	1
StD2	Shubuta and Boswell soils, 8 to 12 percent slopes, eroded	59	VIe-2	15	16	2
StE	Shubuta and Boswell soils, 12 to 17 percent slopes	59	VIIe-4	15	16	2
SuA	Stough fine sandy loam, 0 to 3 percent slopes	59	IIIw-2	12	15	1
Wk	Wehadkee silt loam	59	IVw-4	14	9	3

NRCS Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
WALTHALL COUNTY, MISSISSIPPI

SCALE IN MILES
1 0 1 2 3 4

SOIL ASSOCIATIONS

1 — Brookhaven-Providence-Ora association: Moderately well drained and well drained, nearly level to sloping, silty and loamy soils with a fragipan; on uplands

2 — Ora-Savannah-Ruston association: Moderately well drained and well drained, gently sloping, loamy soils with a fragipan, on ridges; and well drained, sloping to steep, loamy soils on side slopes

3 — Ora-Ruston association: Moderately well drained and well drained, loamy soils on gently sloping ridges and strongly sloping to very steep side slopes

4 — Ruston-Ora association: Chiefly well-drained, loamy soils on gently sloping ridges and sloping to very steep side slopes

5 — Ora-Guin-Ruston association: Moderately well drained and well drained, gently sloping, loamy soils with a fragipan, on ridges; and well drained, steep and very steep, gravelly and loamy soils on side slopes

6 — Ruston-Lucy association: Deep, well-drained, loamy and sandy soils on ridges and steep to very steep side slopes

7 — Cascilla-Collins-Falaya association: Well-drained to somewhat poorly drained, loamy soils in recent alluvium on flood plains

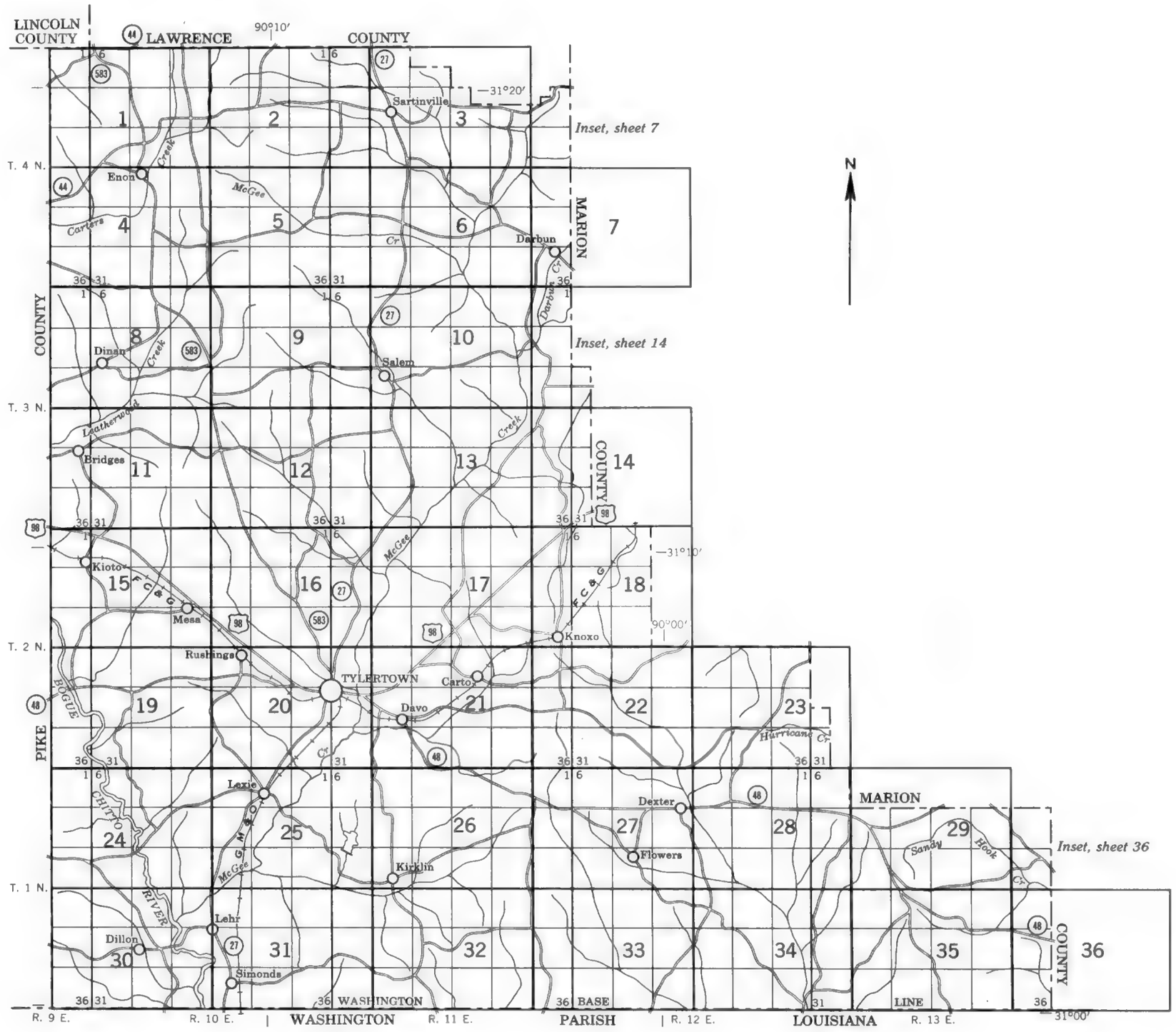
8 — Mantachie-Ochlockonee-Wehadkee association: Well-drained to poorly drained, loamy soils in recent alluvium on flood plains

9 — Wehadkee-Mantachie association: Poorly drained and somewhat poorly drained, loamy soils in recent alluvium on flood plains

10 — Prentiss-Stough-Cahaba association: Moderately well drained and somewhat poorly drained, loamy soils with a weak fragipan, and well drained, friable, loamy soils; on gently sloping stream terraces

February 1967

INDEX TO MAP SHEETS
WALTHALL COUNTY, MISSISSIPPI



N

SCALE IN MILES

1 0 1 2 3 4

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Dual
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State or county

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail, foot
- Railroad
- Ferry (FY)
- Ford
- Grade
- R. R. over
- R. R. under
- Tunnel

Buildings
- School
- Church

Forest fire or lookout station

Mines and Quarries

Mine dump

Pits, gravel or other

Power line

Pipeline

Cemetery (T)

Dams

Levee

Tanks

Well, oil or gas

BOUNDARIES

- National or state
- County
- Township or range, U. S.
- Section line, corner, U. S.
- Reservation
- Land grant
- Small park, cemetery, airport

DRAINAGE

Streams, double-line
- Perennial
- Intermittent

Streams, single-line
- Perennial
- Intermittent
  - Crossable with tillage implements
  - Not crossable with tillage implements
- Unclassified

Canals and ditches (CANAL)

Lakes and ponds
- Perennial (water, w)
- Intermittent

Wells, water (flowing)

Spring

Marsh or swamp

Wet spot

Alluvial fan

Drainage end

RELIEF

Escarpments
- Bedrock
- Other

Prominent peak

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stony, very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully

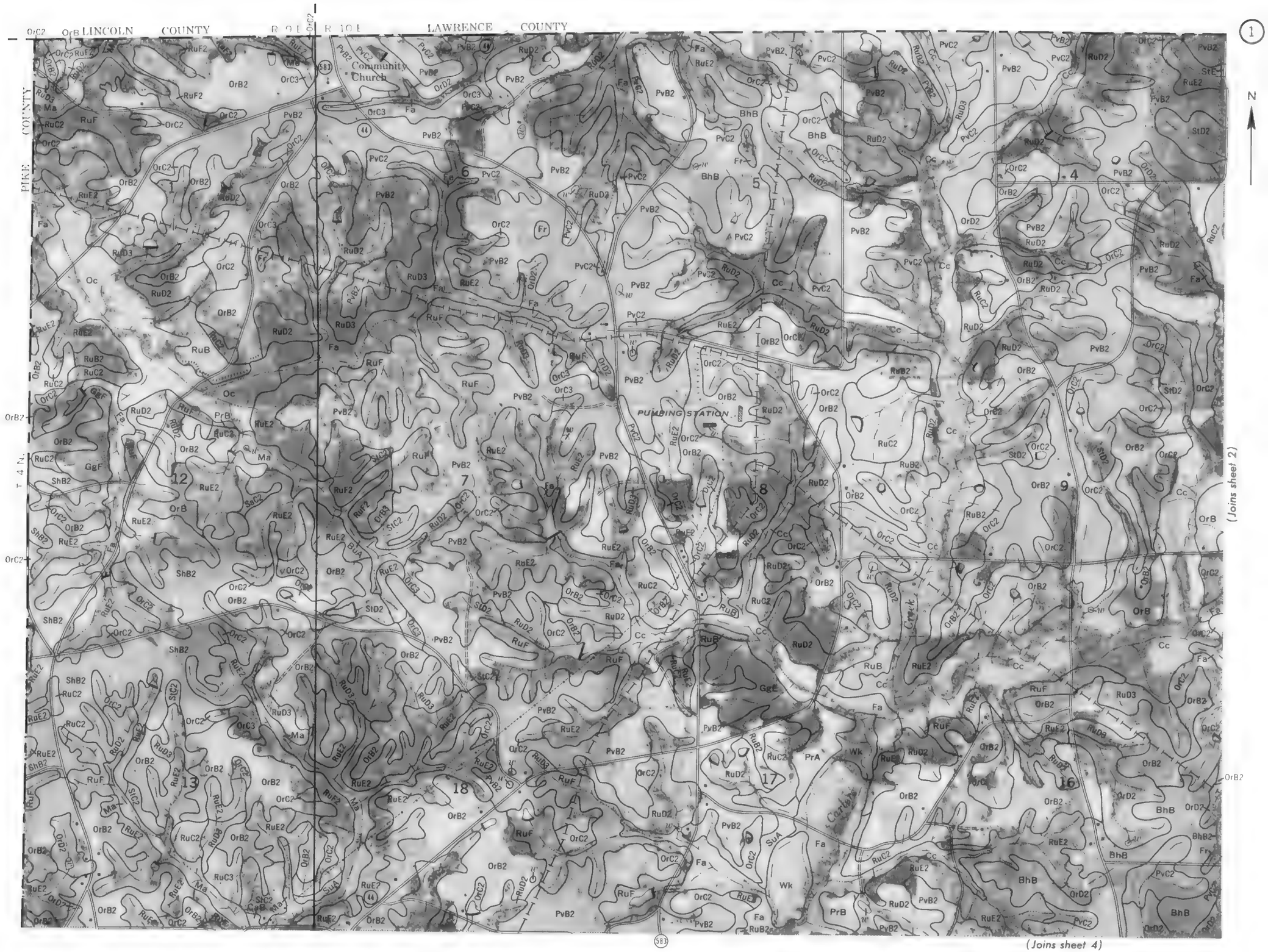
Soil map constructed 1966 by Cartographic Division, Soil Conservation Service, USDA, from 1965 aerial photographs. Controlled mosaic based on Mississippi plane coordinate system, west zone, transverse Mercator projection, 1927 North American datum.

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, E, or F, shows the slope. Most symbols without a slope letter are those of nearly level soils on flood plains, but some are for land types, such as Gullied land, that have a considerable range in slope. The number, 2 or 3, in a symbol indicates that the soil is eroded or severely eroded.

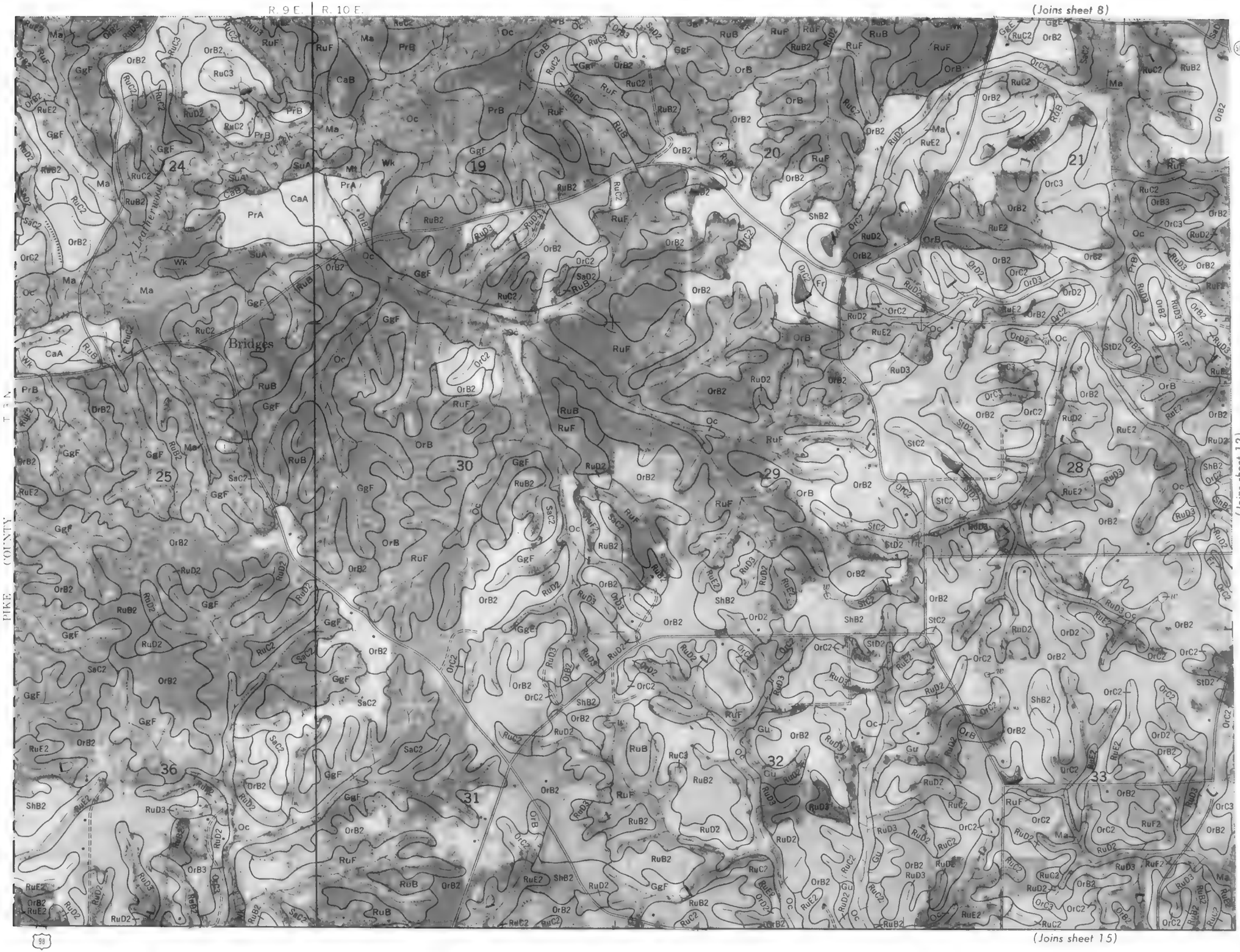
SYMBOL	NAME
BhA	Brookhaven silt loam, 0 to 2 percent slopes
BhB	Brookhaven silt loam, 2 to 5 percent slopes
BhB2	Brookhaven silt loam, 2 to 5 percent slopes, eroded
Br	Bruno loamy sand
BuA	Bude silt loam, 0 to 2 percent slopes
CaA	Cahaba fine sandy loam, 0 to 2 percent slopes
CaB	Cahaba fine sandy loam, 2 to 5 percent slopes
Cc	Cascilla silt loam
Co	Collins silt loam
Fa	Falaya silt loam
Fr	Frost silt loam
GgE	Guin gravelly fine sandy loam, 12 to 17 percent slopes
GgF	Guin gravelly fine sandy loam, 17 to 40 percent slopes
Gu	Gullied land
Ma	Mantachie soils
Ms	Mashulaville silt loam
Mt	Myatt loam
Oc	Ochlockonee–Iuka soils
OrB	Ora loam, 2 to 5 percent slopes
OrB2	Ora loam, 2 to 5 percent slopes, eroded
OrB3	Ora loam, 2 to 5 percent slopes, severely eroded
OrC2	Ora loam, 5 to 8 percent slopes, eroded
OrC3	Ora loam, 5 to 8 percent slopes, severely eroded
OrD2	Ora loam, 8 to 12 percent slopes, eroded
PhB	Pheba silt loam, 0 to 5 percent slopes
PrA	Prentiss fine sandy loam, 0 to 2 percent slopes
PrB	Prentiss fine sandy loam, 2 to 5 percent slopes
PvB2	Providence silt loam, 2 to 5 percent slopes, eroded
PvC2	Providence silt loam, 5 to 8 percent slopes, eroded
RfA	Rumford fine sandy loam, 0 to 2 percent slopes
RlF	Ruston–Lucy complex, 17 to 40 percent slopes
RuA	Ruston fine sandy loam, 0 to 2 percent slopes
RuB	Ruston fine sandy loam, 2 to 5 percent slopes
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded
RuC2	Ruston fine sandy loam, 5 to 8 percent slopes, eroded
RuC3	Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded
RuD2	Ruston fine sandy loam, 8 to 12 percent slopes, eroded
RuD3	Ruston fine sandy loam, 8 to 17 percent slopes, severely eroded
RuE2	Ruston fine sandy loam, 12 to 17 percent slopes, eroded
RuF	Ruston fine sandy loam, 17 to 40 percent slopes
RuF2	Ruston fine sandy loam, 17 to 40 percent slopes, eroded
SaC2	Saffell gravelly fine sandy loam, 2 to 8 percent slopes, eroded
SaD2	Saffell gravelly fine sandy loam, 8 to 12 percent slopes, eroded
Sd	Sandy alluvial land
ShA	Savannah silt loam, 0 to 2 percent slopes
ShB2	Savannah silt loam, 2 to 5 percent slopes, eroded
ShC2	Savannah silt loam, 5 to 8 percent slopes, eroded
StC2	Shubuta and Boswell soils, 5 to 8 percent slopes, eroded
StD2	Shubuta and Boswell soils, 8 to 12 percent slopes, eroded
StE	Shubuta and Boswell soils, 12 to 17 percent slopes
SuA	Stough fine sandy loam, 0 to 3 percent slopes
Wk	Wehadkee silt loam

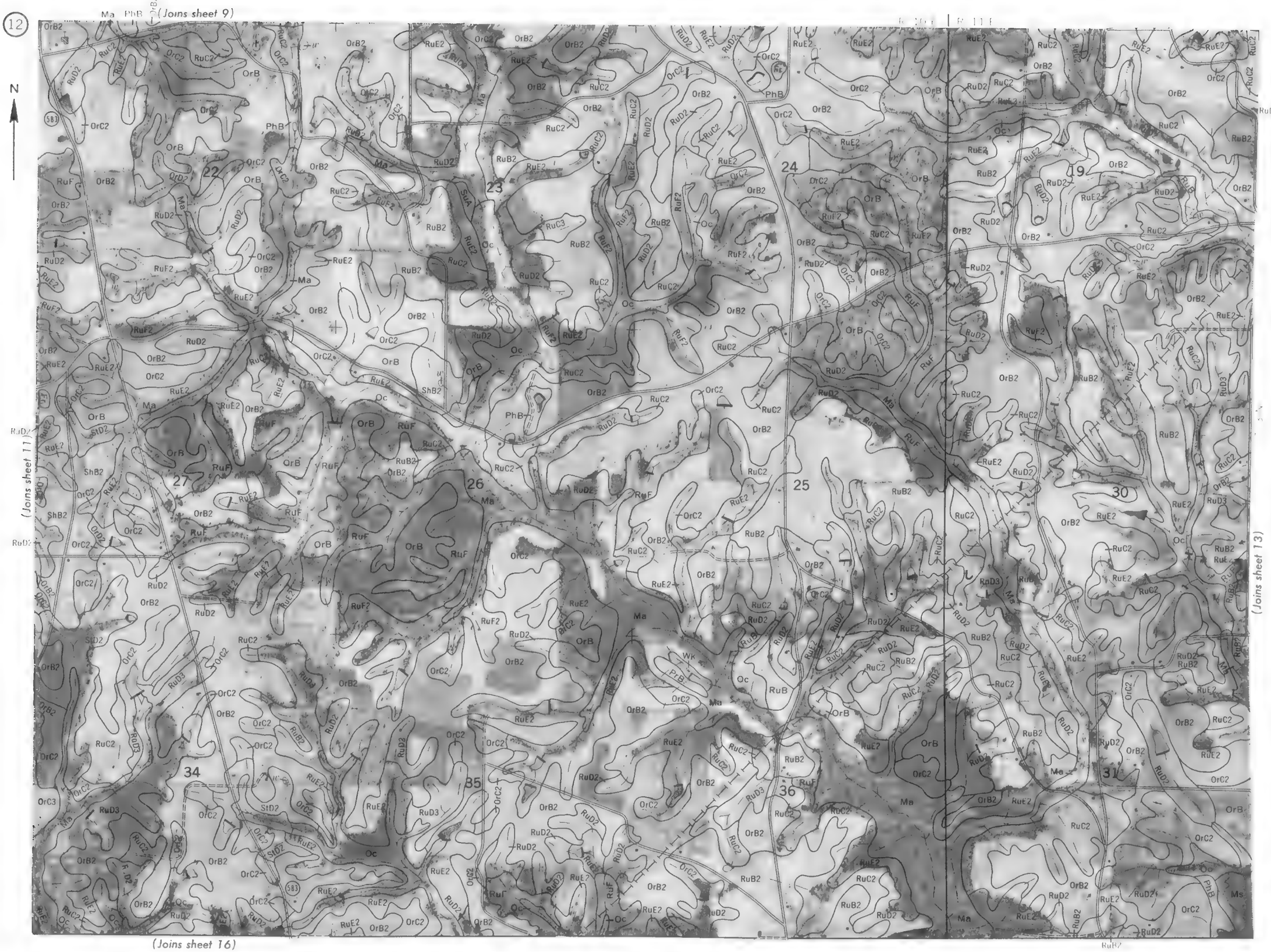
WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 1



Scale 1:20000

WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 10


R. 9 E.
R. 10 E.
T. 3 N.
(Joins sheet 8)
(Joins sheet 12)
(Joins sheet 15)
PIKE COUNTY
Bridges
Leatherwood
Creek
N
1 Mile
½
0
Scale 1:20000

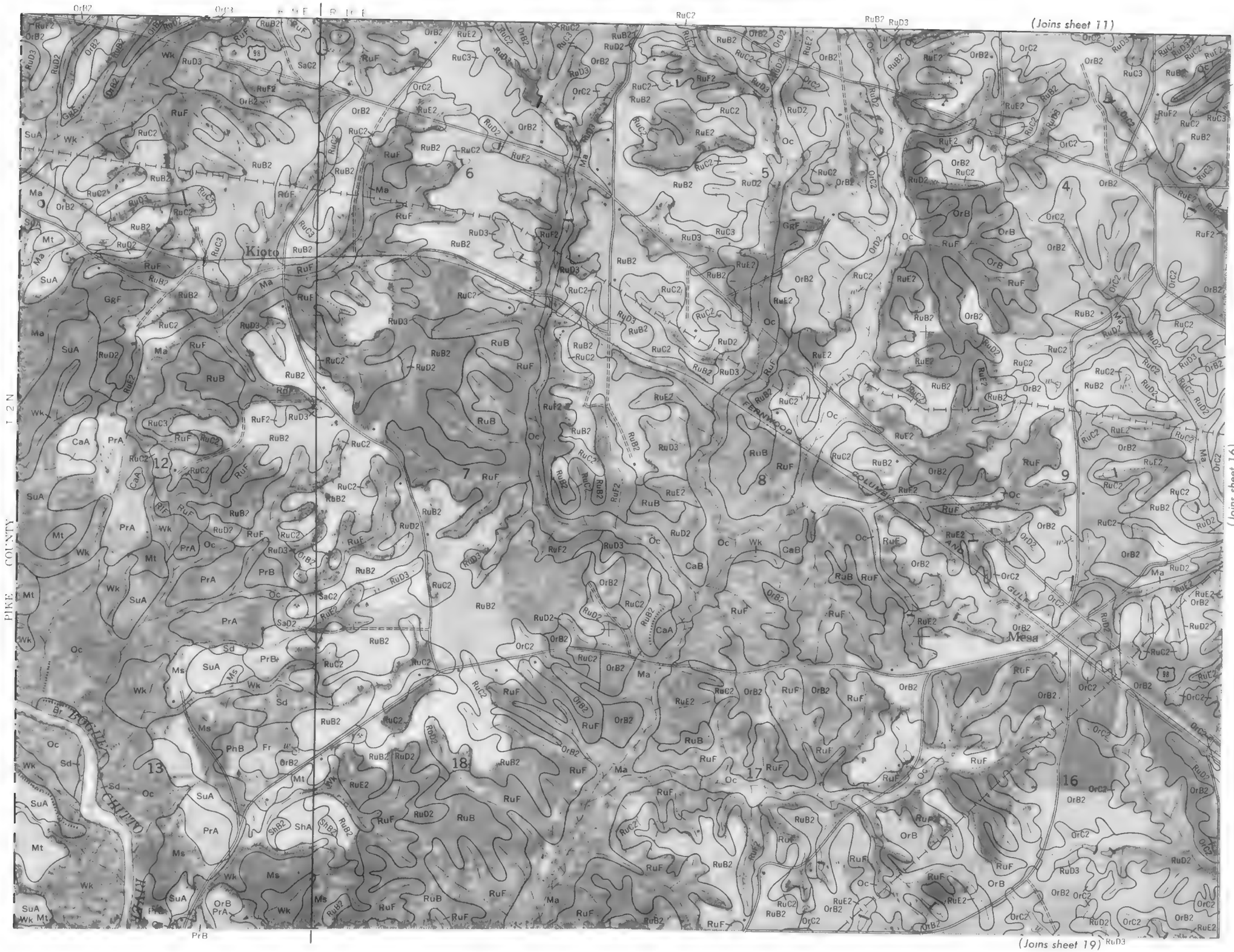

12
N
(Joins sheet 9)
(Joins sheet 11)
(Joins sheet 13)
(Joins sheet 16)
22
23
24
19
27
26
25
30
34
35
36
31
Scale 1:20000
5000 Feet

Range, township, and section corners shown

1/2 0 1 Mile

Scale 1:20000

0 5000 Feet



Range, township, and section corners st

WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 16

16

(Joins sheet 12)

R 10 E | R 11 E

T 12 N

(Joins sheet 15)

(Joins sheet 17)

(Joins sheet 20)

0 ½ 1 Mile

Scale 1:20000

R 11 E.

T 2 N

(Joins sheet 13)

(Joins sheet 16)

(Joins sheet 18)

(Joins sheet 21)

17

N

Scale 1:20000

0 ½ 1 Mile

0 5000 Feet

Range, township, and section corners shown on this map are independe nte

18

(Joins sheet 14)

R. 11 E. | R. 12 E.

Oc MARION COUNTY

N

T. 2 N.

MARION COUNTY

(Joins sheet 17)

(Joins sheet 22)

Ten Mile Creek

Knoxo

COLUMBIA

FERNWOOD

AND

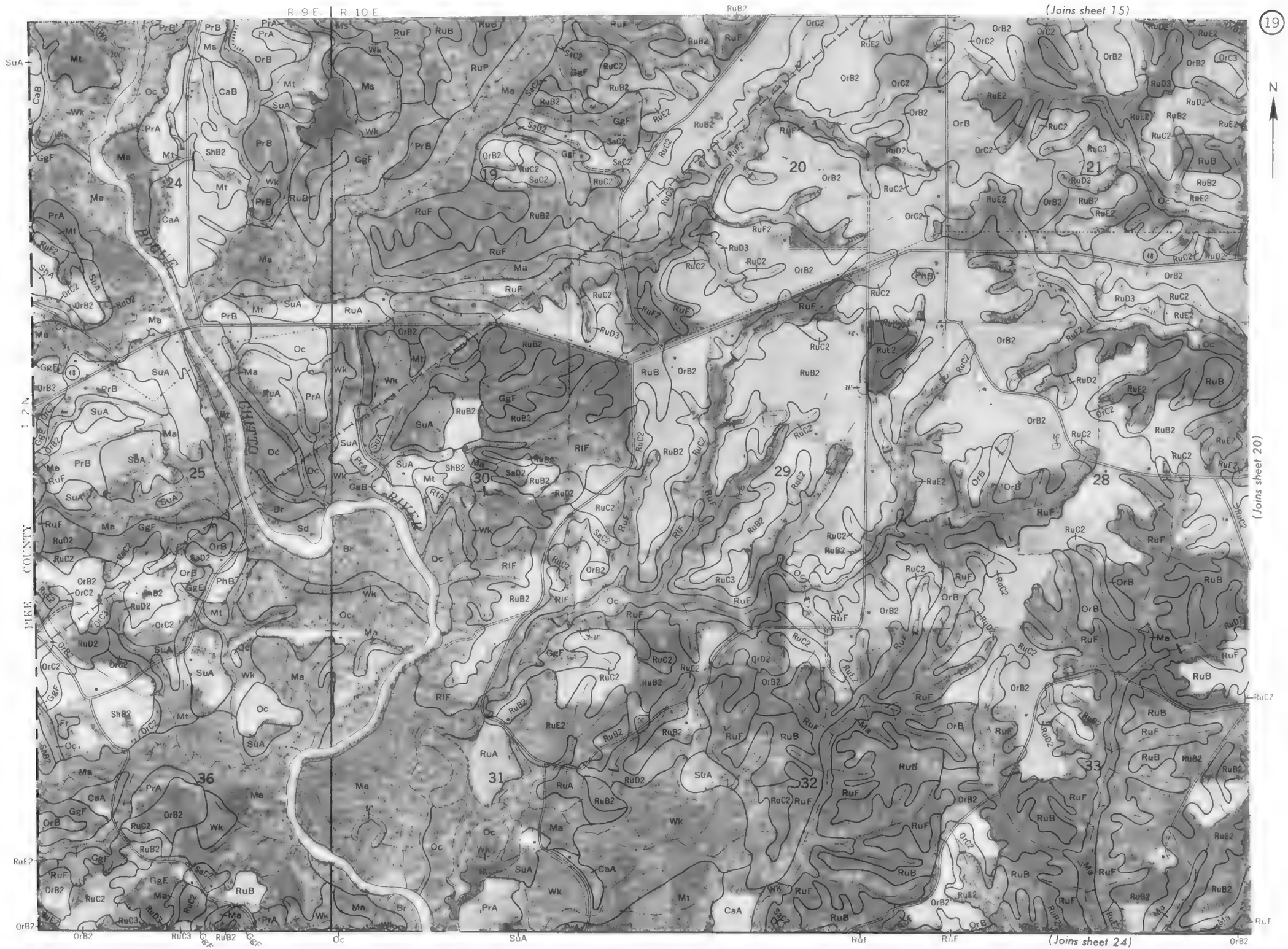
GULF

98

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet


R. 9 E.
R. 10 E.
T. 2 N.
(Joins sheet 15)
(Joins sheet 20)
(Joins sheet 24)
19
N
PIKE COUNTY
BOGUE CHITTO
RIVER
20
21
24
25
30
29
28
36
31
32
33
1 Mile
Scale 1:20000
5000 Feet

WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 2

LAWRENCE COUNTY

R 10 E | R 11 E

(2)

N

(Joins sheet 1)

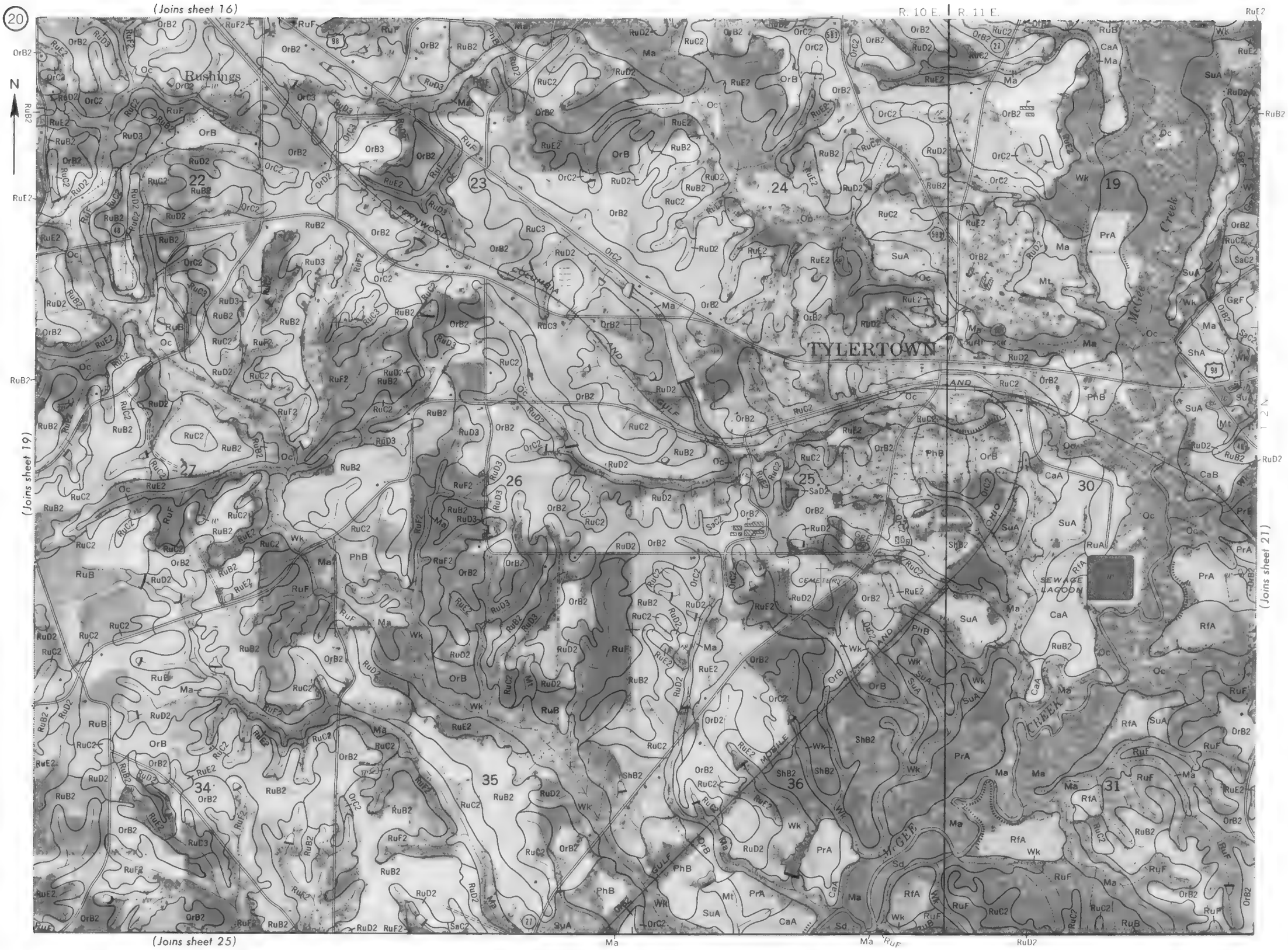
(Joins sheet 3)

(Joins sheet 5)

Scale 1:20000

1 MI

5000 Feet


20
(Joins sheet 16)
R. 10 E.
R. 11 E.
T. 12 N.
N
Rushings
TYLERTOWN
FERNWOOD
SOUTHERN
GULF AND MOBILE
OHIO
McLee Creek
CEMETERY
SEWAGE LAGOON
CHURCH
22
23
24
19
27
26
25
30
34
35
36
31
(Joins sheet 19)
(Joins sheet 25)
(Joins sheet 21)
0
1/2
1 Mile
Scale 1:20000

WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 21

½ 1 Mile

Scale 1:20000

WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 22

22

(Joins sheet 18)

R. 11 E. | R. 12 E.

MARION COUNTY

T 2 N

N

(Joins sheet 21)

(Joins sheet 23)

(Joins sheet 27)

1 Mile

Scale 1:20000

0

5000 Feet

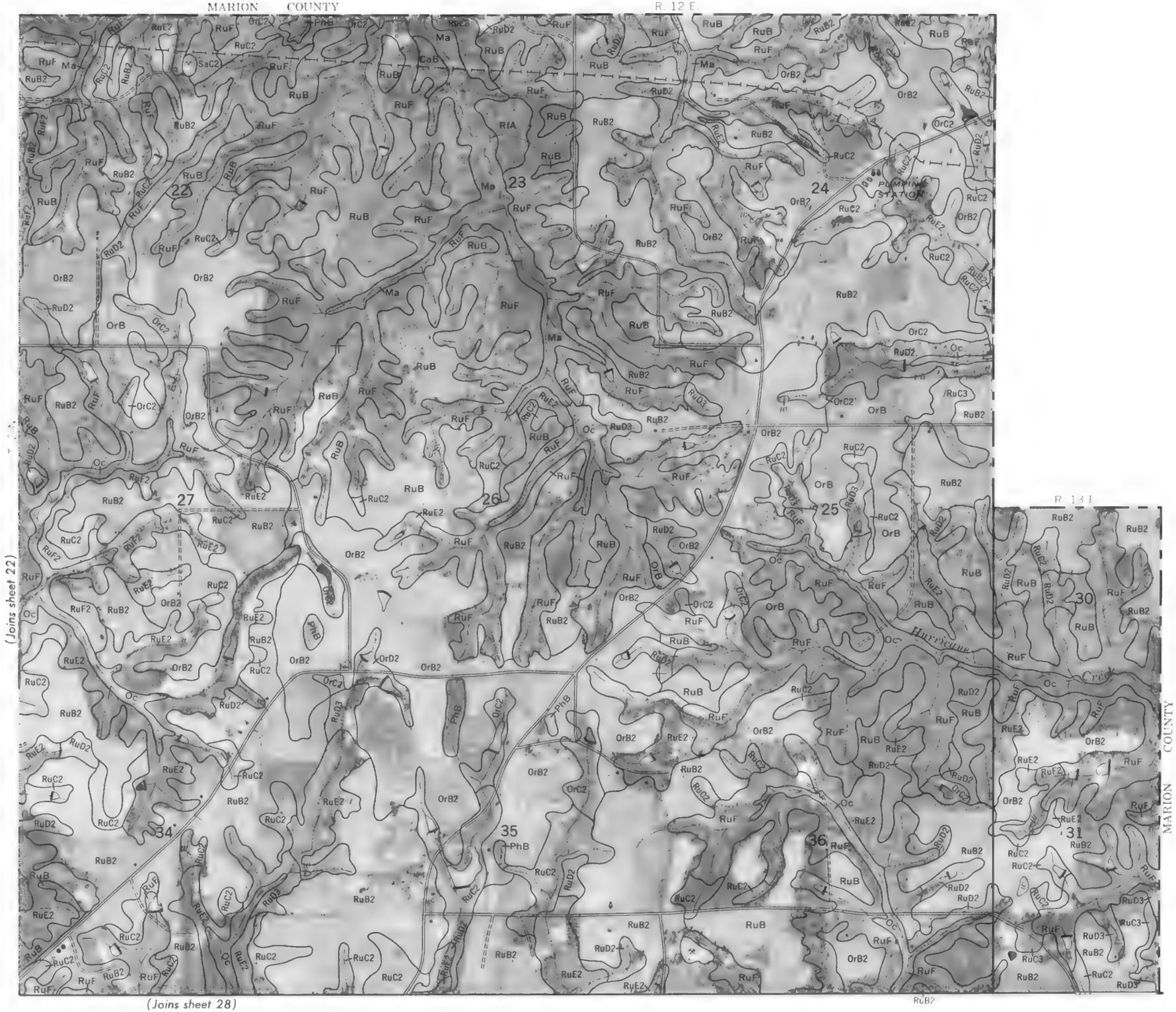
N

MARION COUNTY

R. 12 E.

R. 13 E.

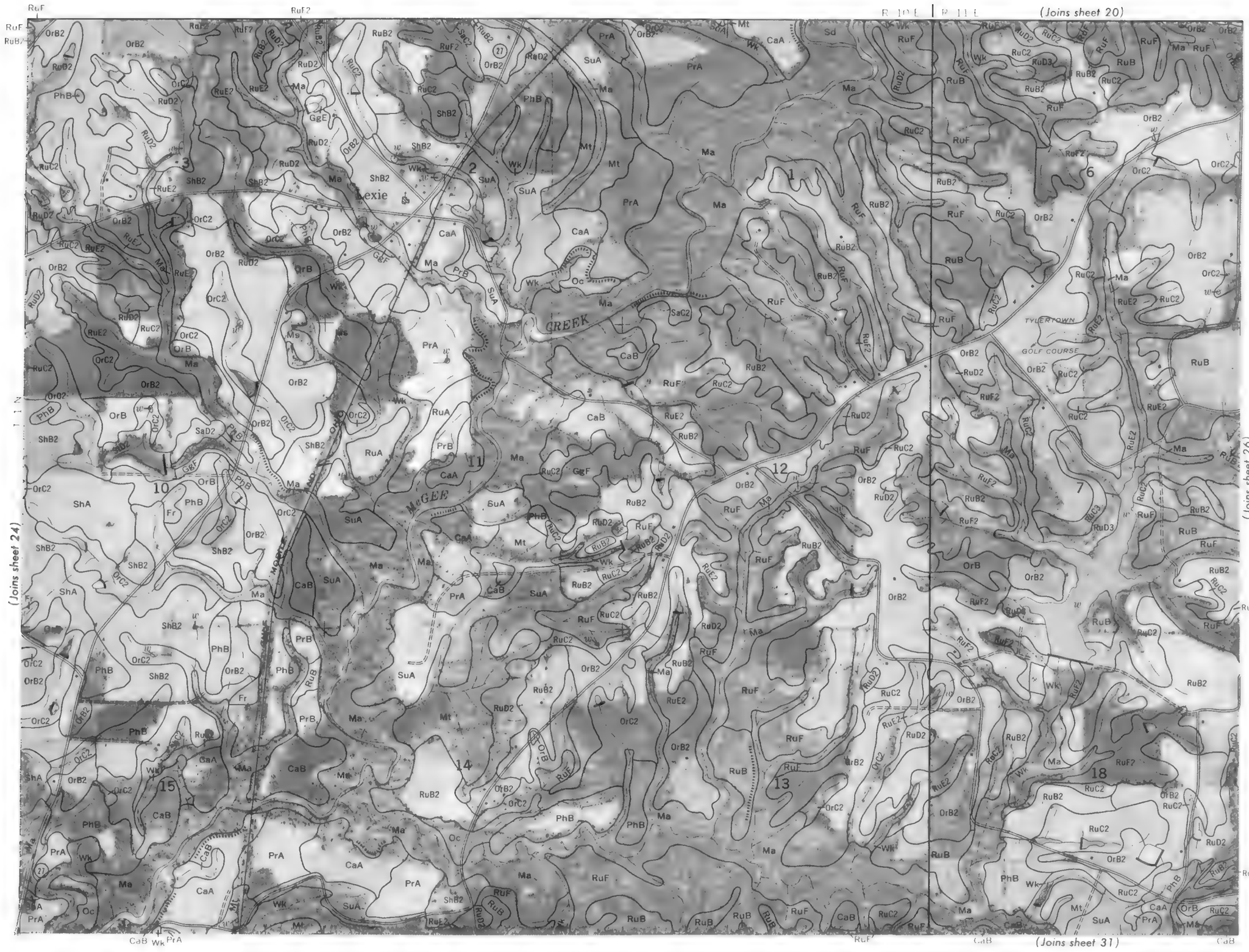
MARION COUNTY



½ 1 Mile Scale 1:20000 0 5000 Feet

Range, township, and sect on corners shown on th map are indefir te


(Joins sheet 19)
R 9 E
R 10 E
T 11 N
N
COUNTY
PIKE
BOGUE
CHITTO
RIVER
(Joins sheet 25)
(Joins sheet 30)
(27)
Scale 1:20000
1 Mile
5000 Feet



Range, township, and section corner

(Joins sheet 21)

(Joins sheet 25)

(Joins sheet 27)

(Joins sheet 32)

Mt Zion Church

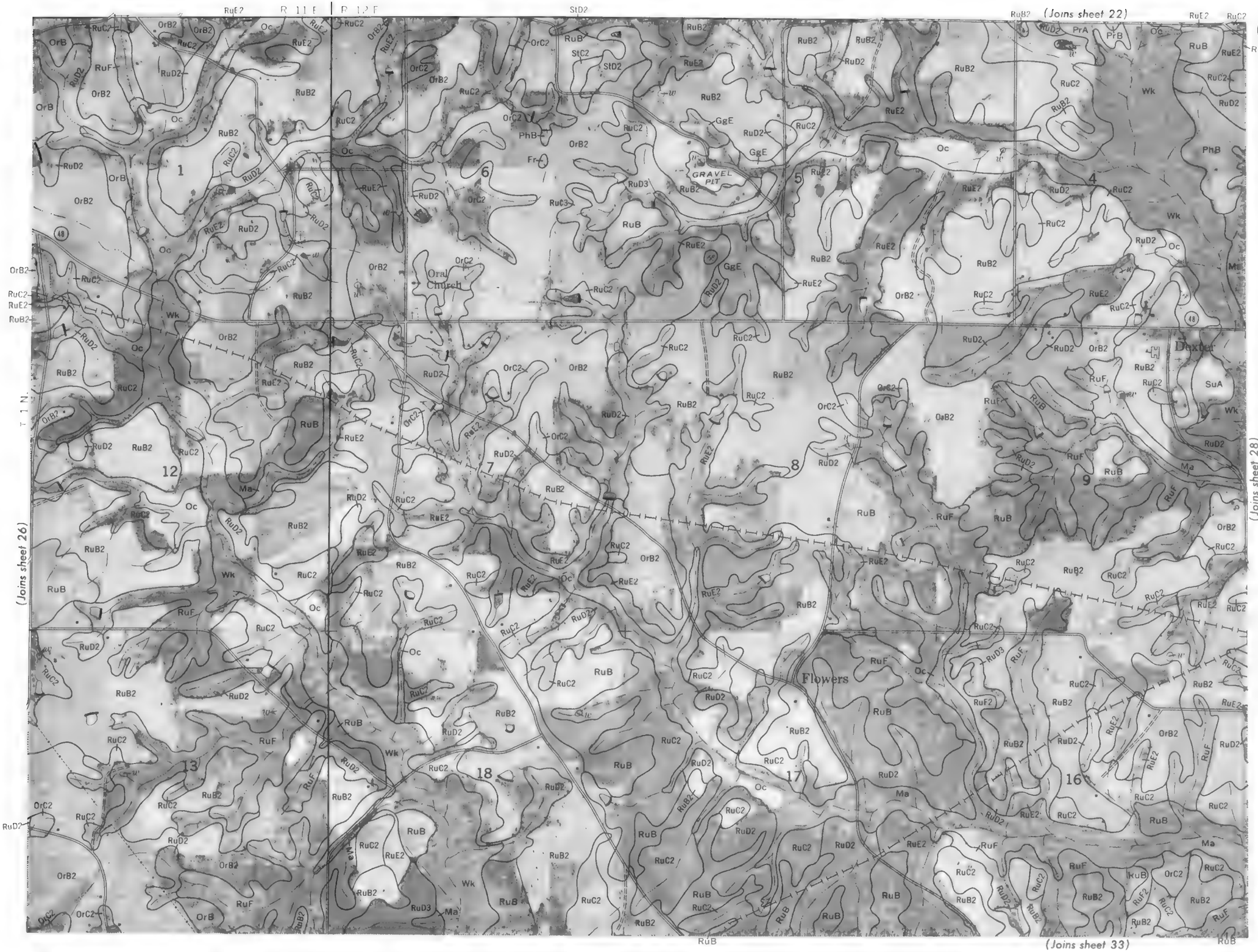
Mt Zion School

Calvary Church

Kirklin

1 Mile

Scale 1:20000


R 11 E
R 12 E
T 11 N.
(Joins sheet 22)
(Joins sheet 26)
(Joins sheet 28)
(Joins sheet 33)
Oral Church
GRAVEL PIT
Dexter
Flowers
N
27
Scale 1:20000

28

N

R. 12 E. | R. 13 E.

(Joins sheet 23)

(Joins sheet 27)

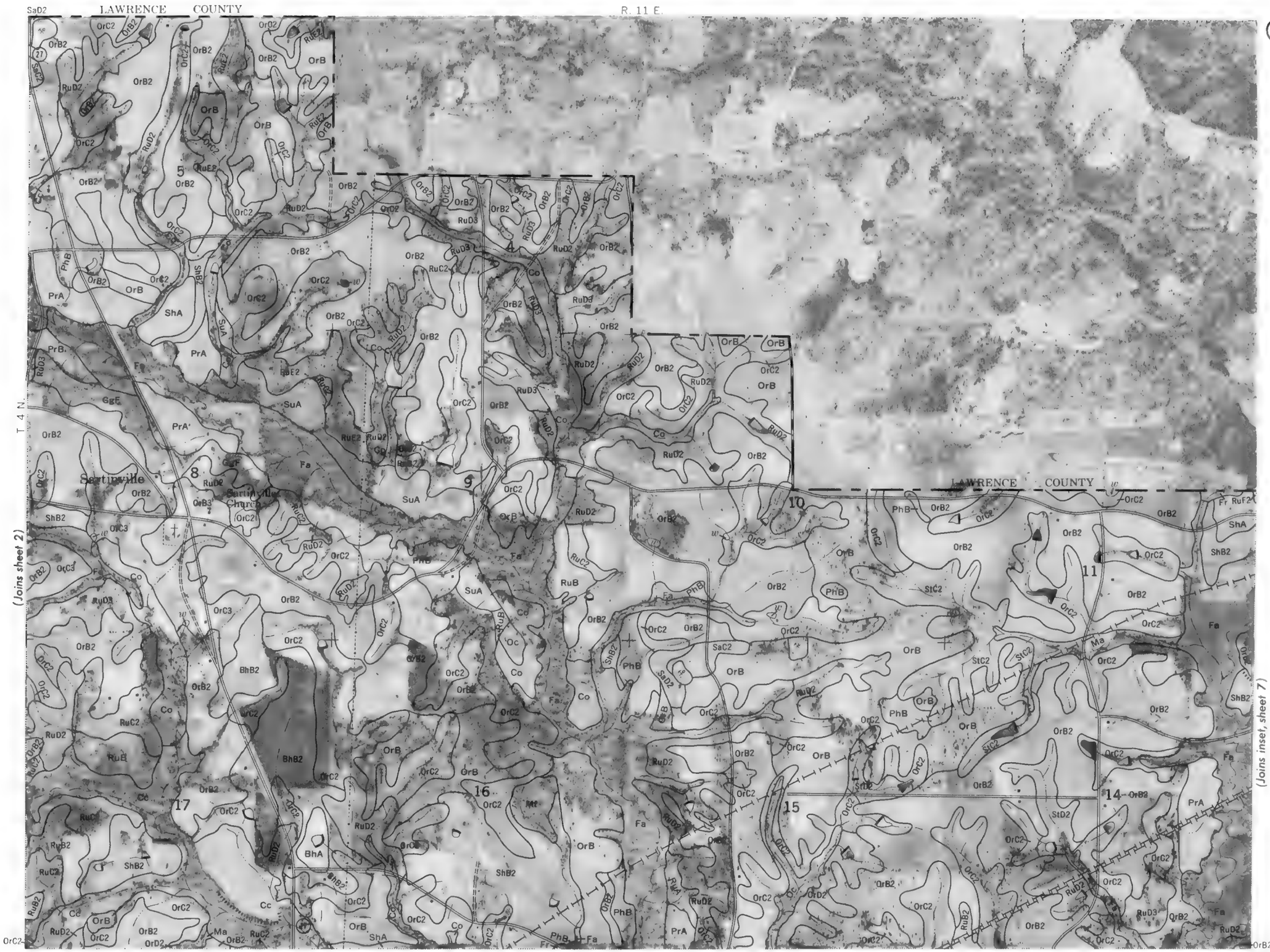
(Joins sheet 29)

(Joins sheet 34)

MARION COUNTY

Scale 1:20000


29
N
MARION COUNTY
R. 13 E.
T. 1 N.
(Joins sheet 28)
(Joins inset, sheet 36)
(Joins sheet 35)
Sandy Hook
48
8
9
10
11
16
17
15
14
1 Mile
0
Scale 1:20000
5000 Feet



WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 30

(30)

(Joins sheet 24)

R. 9 E. | R. 10 E.

N

T. 1 N.

(27)

(Joins sheet 31)

McGEE CREEK

BOGUE CHITTO

CHITTO

LEAF RIVER

Dillon

24 19 20 21 25 30 29 28 36 31 32 33

PIKE COUNTY

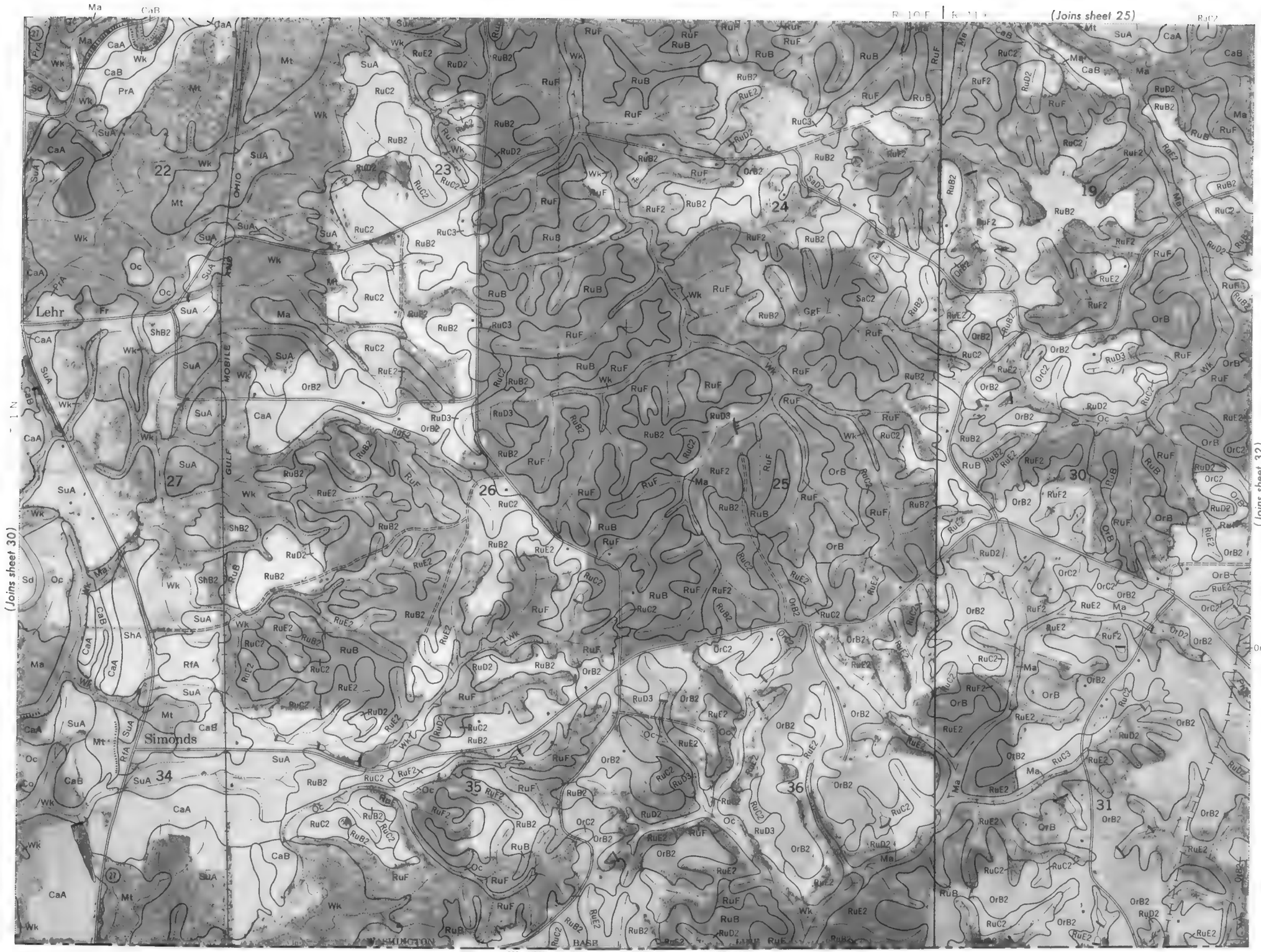
WASHINGTON PARISH LOUISIANA

WASHINGTON BASE LINE

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet



Range, township, and section corner

32

(Joins sheet 26)

R. 11 E.

T. 1 N.

N

(Joins sheet 31)

(Joins sheet 33)

PhB

WASHINGTON PARISH

BASE LINE

LOUISIANA

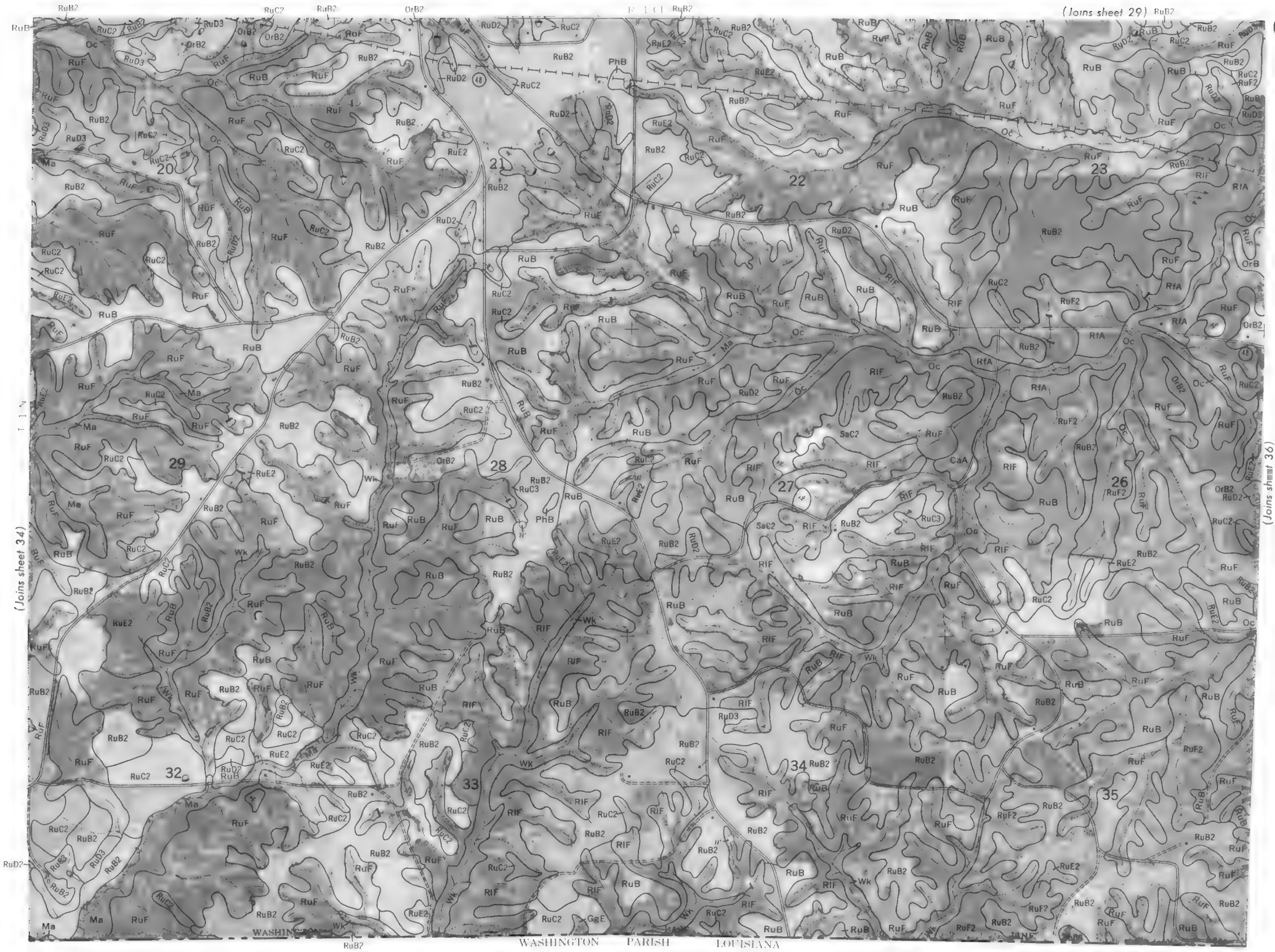
0 ½ 1 Mile

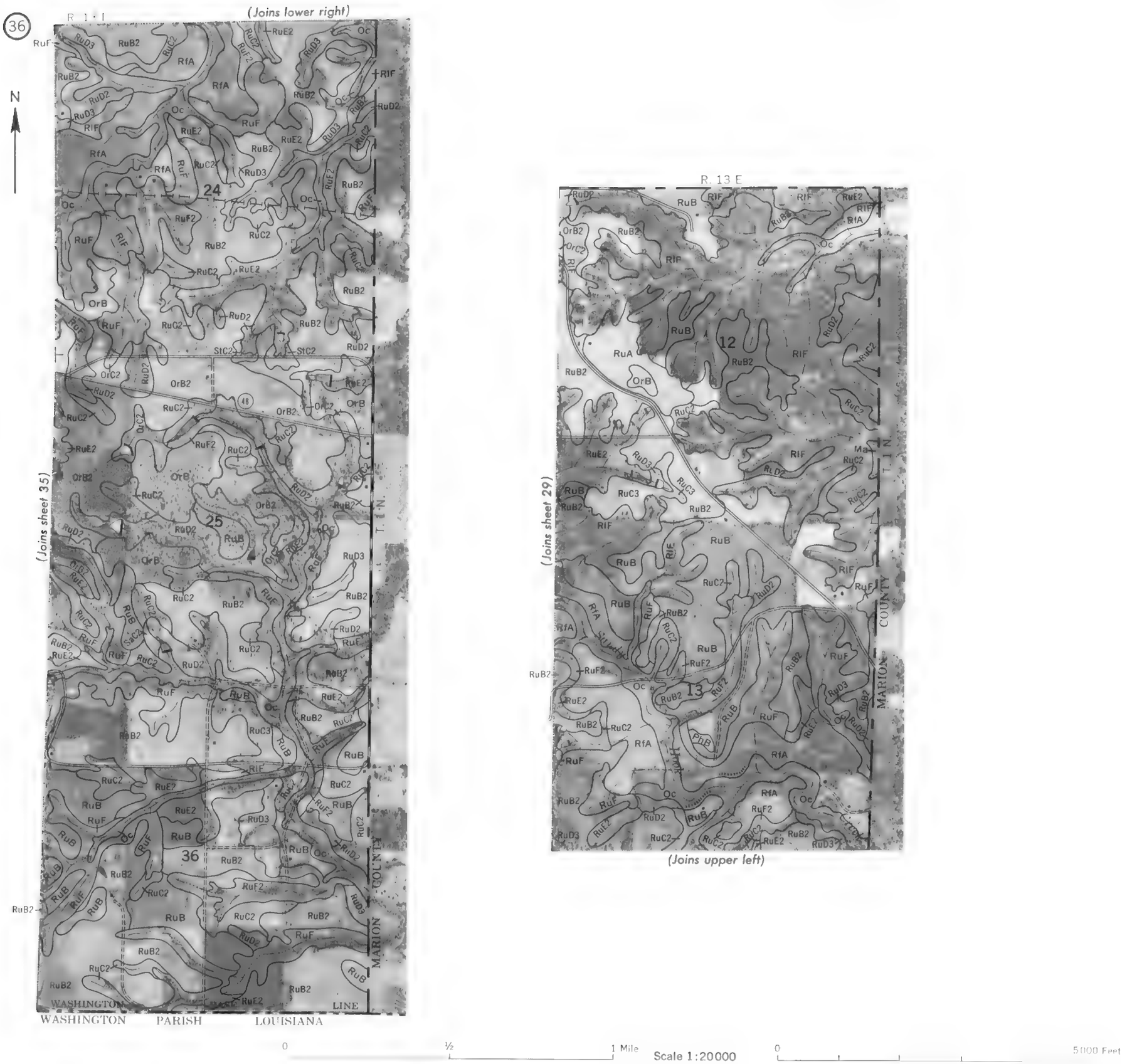
Scale 1:20000

0 5000 Feet


(Joins sheet 27)
(Joins sheet 32)
(Joins sheet 34)
WASHINGTON PARISH LOUISIANA
Scale 1:20000
1 Mile
N
33
24
19
20
21
25
30
29
28
36
31
32
33
RuB
RuB2
RuC2
RuD2
RuE2
RuF
OrB
OrB2
OrC2
Ma
Wk
RfA
SuA
GgF
PhB
RuA
ShA

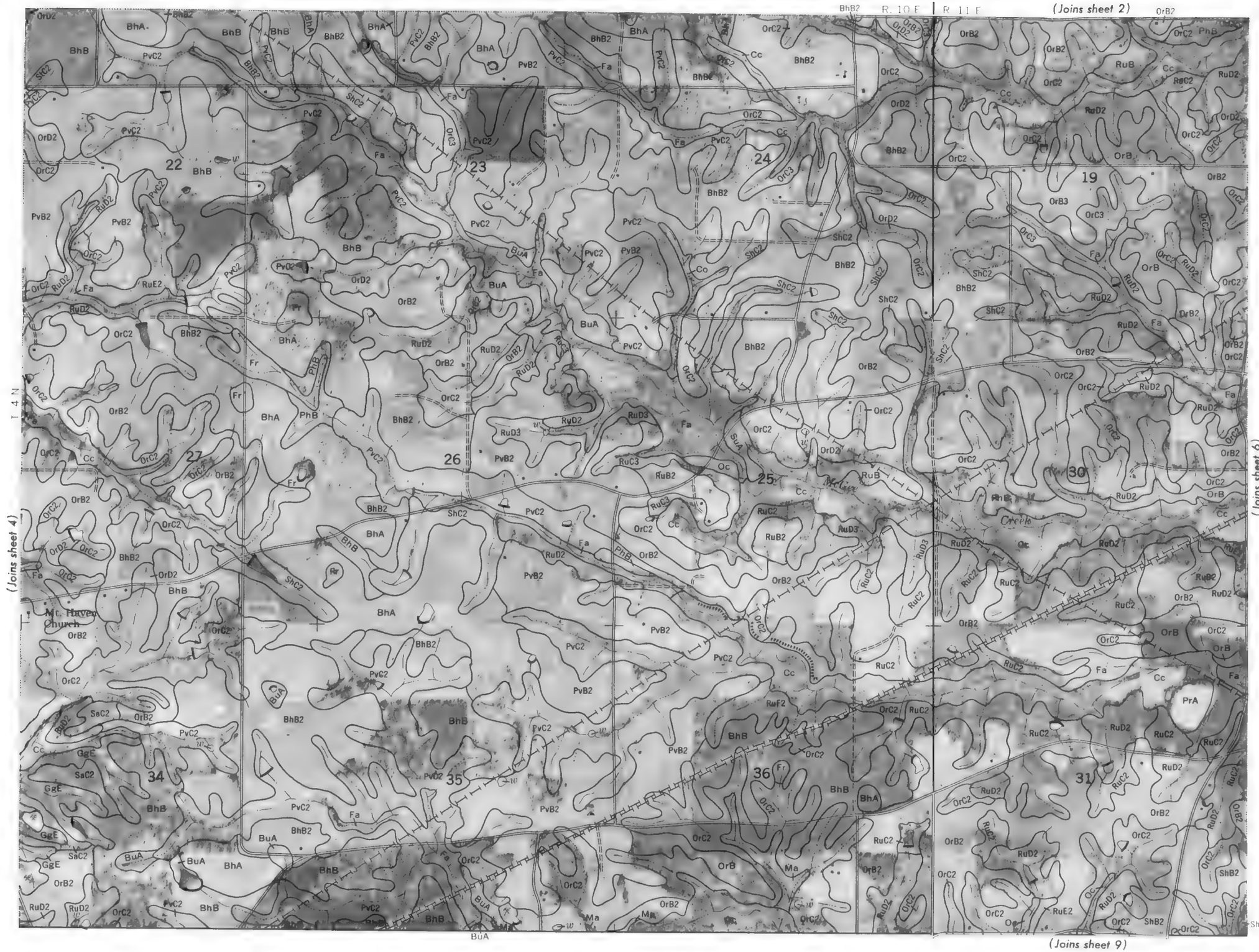

34
N
(Joins sheet 28)
(Joins sheet 33)
(Joins sheet 35)
22
23
24
19
27
26
25
30
34
35
36
31
RuB2
RuF
RuD2
RuD3
RuC2
RuC3
RuE2
RuF2
OrB2
OrC2
Ma
CaB
RuB
RIF
PhB
ShB2
StC2
StE
RfA
SuA
Mt
Wk
CaA
RuA
GgF
RuO8
Oc
SaC2
GbE
OrB
RuA
PrB
WASHINGTON PARISH LOUISIANA
0 ½ 1 Mile
Scale 1:20000
0 5000 Feet


(Joins sheet 29)
35
N
(Joins sheet 36)
(Joins sheet 34)
WASHINGTON PARISH LOUISIANA
1 Mile
Scale 1:20000


36
R. 14 E.
R. 13 E.
T. 1 N.
(Joins lower right)
(Joins sheet 35)
(Joins sheet 29)
(Joins upper left)
N
24
25
36
12
13
48
MARION COUNTY
WASHINGTON PARISH
LOUISIANA
WASHINGTON LINE
RuF
RuB2
RuC2
RuD2
RuD3
RuE2
RuF2
RuB
RuA
RuC3
RIF
RfA
OrB
OrB2
OrC2
StC2
Oc
PhB
0
½
1 Mile
Scale 1:20000
0
5000 Feet

Scale 1:20000

5000 Feet



Range, township, and section corners shown on this map are indefinite

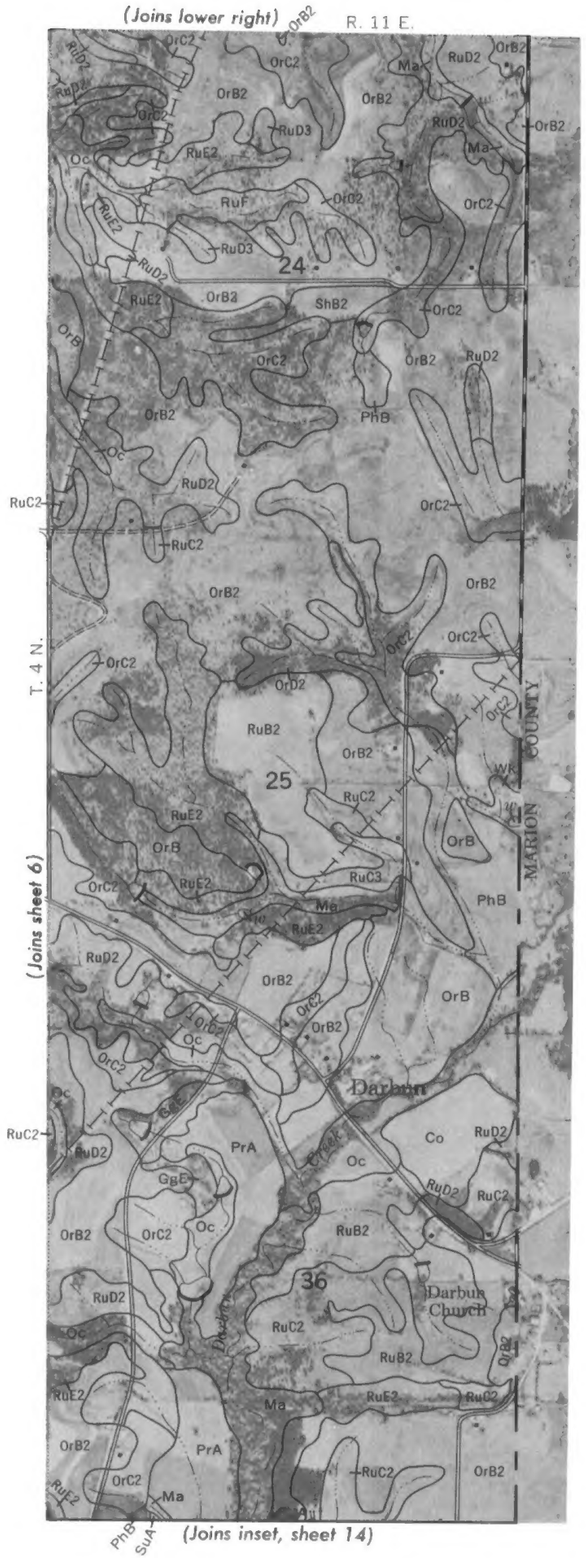
0 ½ 1 Mile Scale 1:20000 0 5000 Feet

WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 7

WALTHALL COUNTY, MISSISSIPPI NO. 7

7

N



WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 8

(8)

N

R. 9 E. | R. 10 E.

T. 3 N.

PIKE COUNTY

(Joins sheet 4)

(Joins sheet 9)

(Joins sheet 11)

Dinan

Leatherwood

PUMP STATION

0 ½ 1 Mile

Scale 1:20000

0 5000 Feet

WALTHALL COUNTY, MISSISSIPPI NO. 8

WALTHALL COUNTY, MISSISSIPPI — SHEET NUMBER 9

WALTHALL COUNTY, MISSISSIPPI NO. 9

R. 10 E. | R. 11 E.

(Joins sheet 5)

(Joins sheet 8)

(Joins sheet 10)

(Joins sheet 12)

T. 3 N.

East Sunny Hill Church

Scale 1:20000

0 ½ 1 Mile

0 5000 Feet